

A REVISION OF *MEDINILLA*, *PACHYCENTRIA*, AND *POGONANTHERA* (MELASTOMATACEAE) FROM THE MALAY PENINSULA

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ABSTRACT

The genera *Medinilla*, *Pachycentria*, and *Pogonanthera* have been thoroughly revised for the Malay Peninsula. Fourteen species and 3 varieties of *Medinilla*, including *Medinilla selangorensis* Maxw., which is proposed as a new species, with 12 new synonyms, and 3 new combinations; 3 species of *Pachycentria*, with 1 new combination; and *Pogonanthera pulverulenta* (Jack) Bl. are included. In addition to the taxonomic treatment (with keys and critical notes), the comparative morphologies of various salient organs, distribution patterns, and an index to collections are presented. Drawings of the calyx, petals, stamens, and other important structures have been prepared for all taxa.

INTRODUCTION

This paper, the first in a planned series of revisions on Malayan Dissochaeteae (Melastomataceae), has been prepared in an effort to clarify much of the taxonomic confusion that has developed within the tribe throughout the years. In an overall attempt to eventually revise the entire tribe, three genera: *Medinilla*, *Pachycentria*, and *Pogonanthera* were studied first since their generic distinctions are clear, and the individual taxa in these three are relatively better delimited. Now that *Memecylon* (28 species and 3 varieties), *Pternandra* (4 species), and *Astronia* (1 species) have been completed for the Malay Peninsula it is hoped that I shall proceed to study *Dissochaeta*, *Diplectria*, *Macrolenes* (*Marumia*) and related genera.

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Medinilla, Literary Review

Clarke (1879) has brief discussions of 11 species and 1 variety of *Medinilla* in the flora of British India where 5 species and the 1 variety were collected from the Malay Peninsula. These include: *M. rosea* Gaud. (description = *M. clarkei* King), *M. macrocarpa* Bl. (description = *M. radicans* (Bl.) Bl.), *M. hasseltii* Bl. (= *M. crassifolia* (Reinw. ex Bl.) Bl.), *M. hasseltii* Bl. var. *griffithii* Cl. (= *M. scortechinii* King), *M. rubicunda* (Jack) Bl., and *M. speciosa* (Reinw. ex Bl.) Bl. *Medinilla maingayi* Cl., listed under imperfectly known species, is now transferred to *Pachycentria maingayi* (Cl.) Maxw.

King (1900) included 10 species and 2 varieties of *Medinilla* for the Malay Peninsula; among these taxa he described 5 new species and 1 new variety. Among these 10 species I recognise 4 as being distinct, viz. *M. speciosa* (Reinw. ex Bl.) Bl., and 3 of the new species: *M. clarkei* King, *M. scortechinii* King, and *M. venusta* King. The other two of King's new species have been reduced in this paper: *M. scandens* King = *M. alternifolia* Bl., and *M. heteranthera* King = *M. varingiaefolia* (Bl.) Nayar. Two other species are now considered as synonyms: *M. hasseltii* (Bl.) Bakh. f. = *M. crassifolia* (Reinw. ex Bl.) Bl., and *M. perakensis* King = *M. clarkei* King. *M. maingayi* Cl. has been changed to *Pachycentria maingayi* (Cl.) Maxw., and King's description of *M. crassinervia* Bl. is incorrect and fits *M. radicans* (Bl.) Bl. Both varieties have been reduced, viz. *M. heteranthera* King var. *latifolia* King = *M. varingiaefolia* (Bl.) Nayar, and *M. hasseltii* Bl. var. *griffithii* Cl. = *M. scortechinii* King.

Ridley (1922) copied and summarized most of King's work and added 3 of his own new species: *M. pendens* Ridl., *M. pahangensis* Ridl. (= *M. clarkei* King), and *M. penduliflora* Ridl.; while reducing *M. chionantha* Stapf to *M. venusta* King var. *chionantha* (Stapf) Ridl. The only other taxonomic change Ridley made in his treatment of *Medinilla* was incorrectly reducing *M. hasseltii* Bl. var. *griffithii* Cl. to the type species. Stapf, in addition to *M. chionantha* which he described in 1906, also considered *M. gratiosa* Stapf as a new species in 1933. Both species are, in my opinion, synonyms of *M. venusta* King. *M. crassiramea* Hend., described in 1933 from a specimen collected in the Cameron Highlands, Pahang, is included in this paper as a variety of *M. clarkei* King.

In 1930 Craib described 4 new taxa of *Medinilla* from southern Thailand, viz. *M. elliptica* Craib and *M. elliptica* Craib var. *tetramera* Craib (both = *M. curtisii* Hk. f.), *M. emarginata* Craib (= *M. succulenta* (Bl.) Bl.), and *M. ferrata* Craib (= *M. laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw. These 4 taxa plus *M. penduliflora* Ridl. and *M. succulenta* (Bl.) Bl. were listed by Craib (1931) as having been collected in peninsular Thailand.

Henderson (1949, 1959) gives brief descriptions and excellent diagrams of 7 species of *Medinilla* from Malaysia, viz. *M. scandens* King (= *M. alternifolia* Bl.), *M. maingayi* Cl. (= *Pachycentria maingayi* (Cl.) Maxw.), *M. clarkei* King, *M. speciosa* (Reinw. ex Bl.) Bl., *M. scortechinii* King, *M. crassinervia* Bl. (description and drawing = *M. radicans* (Bl.) Bl.), and *M. hasseltii* Bl. (= *M. crassifolia* (Reinw. ex Bl.) Bl.).

Furtado (1963) discussed *M. pterocaula* Bl. and *M. radicans* (Bl.) Bl., however I do not believe that the former species is found in the Malay Peninsula. The 3 specimens that Furtado cited under *M. pterocaula* Bl. differ from the type collection (Blume s.n., from Java) at Leiden, which are, in my opinion, *M. radicans* (Bl.) Bl. I agree with Furtado in reducing *M. quadrifolia* Bl. to a synonym of *M. radicans* (Bl.) Bl. Nayar (1970) correctly transferred *Pachycentria varingiaefolia* Bl. to *Medinilla varingiaefolia* (Bl.) Nayar and renamed *Pachycentria speciosa* Ridl. as *M. bakhuizenii* Nayar (= *M. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw.).

In this paper 14 species and 3 varieties of *Medinilla* are enumerated. This includes 3 new combinations (all to varietal status), 12 new synonyms (not including 2 in *scheda* names: *M. clarkei* King var. *sumatrensis* Ohwi = *M. clarkei* King, and *M. holttumi* Hend. = *M. succulenta* (Bl.) Bl.), and *M. selangorensis* Maxw. — a new species.

Medinilla curtisii Hk. f., *M. laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw., and *M. rubicunda* (Jack) Bl. have been included since they have been collected on a few occasions from peninsular Thailand (the two former taxa) and Penang (the latter species).

Distribution

Seven taxa of *Medinilla* are only known from the Malay Peninsula, viz. *M. clarkei* King var. *crassiramea* (Hend.) Maxw. (Pahang), *M. laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw. (peninsular Thailand), *M. pendens* Ridl. (southern Johore), *M. penduliflora* Ridl., *M. scortechinii* King, *M. selangorensis* Maxw. (Selangor and Pahang), and *M. venusta* King. All of the other taxa have wider distributions, e.g. *M. curtisii* Hk. f. and *M. rubicunda* (Jack) Bl. — from the Indian sub-continent to the Malay Peninsula (the latter also in Sumatra); and *M. speciosa* (Reinw. ex Bl.) Bl. which is found from the Malay Peninsula to the Moluccas. Most of the other species have been collected in the Malay Peninsula, Sumatra, Borneo, and Java: 7 of which were discussed by Bakh. f. in his paper on the Melastomataceae of the Malay Archipelago.

Abundance

Based on herbarium material that I have studied, I have grouped the 17 taxa of *Medinilla* from the Malay Peninsula into 4 categories based on their relative abundance; very common, common, not common, and rare. *Medinilla clarkei* King and *M. crassifolia* (Rienw. ex Bl.) Bl. are very common species and have been found throughout the peninsula. *M. scortechinii* King, *M. speciosa* (Reinw. ex Bl.) Bl., *M. varingiaefolia* (Bl.) Nayar, and *M. venusta* King are common species and have been found in most of the Malaysian States, but not as frequently as the two very common species noted above. The following three species are not common; *M. alternifolia* Bl., *M. radicans* (Bl.) Bl., and *M. succulenta* (Bl.) Bl. The remaining 8 taxa are rare, and in 5 instances have only been collected on a few occasions in the type locality, e.g. *M. clarkei* King var. *crassiramea* (Hend.) Maxw. (Cameron Highlands, Pahang), *M. laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw. (Sarat Province, Thailand), *M. pendens* Ridl. (Kota Tinggi, Johore), *M. selangorensis* Maxw. (Selangor, Pahang), and *M. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw. (Cameron Highlands, Pahang).

Habit

Medinilla alternifolia Bl. is always a creeper, while *M. radicans* (Bl.) Bl., *M. crassifolia* (Reinw. ex Bl.) Bl. and *M. venusta* King, which usually grow as shrubs, have been recorded on a few collections as creepers. All the other 13 taxa have always been collected in flower or fruit as shrubs. While most taxa are usually epiphytes, 5 other taxa have, on occasion, been collected on the ground, viz. *M. clarkei* King, *M. clarkei* King var. *crassiramea* (Hend.) Maxw., *M. speciosa* (Reinw. ex Bl.) Bl., *M. varingiaefolia* (Bl.) Nayar, and *M. venusta* King.

Branchlets and Stems

The branchlets and stems provide several useful characteristics in identification. The branchlets are either cylindric or angled. Eleven taxa of *Medinilla* from the Malay Peninsula have exclusively cylindric branchlets (and stems), e.g. *M. clarkei* King, *M. scortechinii* King, and *M. varingiaefolia* (Bl.) Nayar. *M. curtisii* Hk. f. and *M. succulenta* (Bl.) Bl. usually have cylindric branchlets, but sometimes they are 4-angled. *M. penduliflora* Ridl. always has sharply 4-angled branchlets, while those of *M. speciosa* (Reinw. ex Bl.) Bl. are 4-angled to 4-winged. *M. radicans* (Bl.) Bl. has cylindric to 2-grooved branchlets, and *M. alternifolia* Bl. has flattened and 2-grooved upper internodes. Whether the morphology of the branchlets is a result of the compression of 4-angled branchlets, thus giving a flattened and 2-grooved appearance, or expansion of a flattened internode is a morphological problem and should be investigated. Generally speaking, mature stems of *Medinilla* are cylindric.

The texture of mature stems is also an excellent taxonomic aid since this is an obvious and usually constant feature of all taxa that I have studied. Six taxa have entirely smooth stems, e.g. *M. radicans* (Bl.) Bl., *M. speciosa* (Reinw. ex Bl.) Bl., and *M. varingiaefolia* (Bl.) Nayar. Gradation into pustulate stems is notable in *M. curtisii* Hk. f. and *M. pendens* Ridl. where the stems vary from smooth to sparsely pustulate. *M. alternifolia* Bl. has roughened, lenticellate stems; while the 8 remaining taxa always have distinctly and often densely pustulate stems, e.g. *M. clarkei* King, *M. crassifolia* (Reinw. ex Bl.) Bl., *M. succulenta* (Bl.) Bl., and *M. venusta* King.

The only taxa that have pubescent (furfuraceous) branchlets are: *M. alternifolia* Bl., *M. clarkei* King and *M. clarkei* King var. *crassiramea* (Hend.) Maxw. *M. laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw., according to Craib, has ferrugineous branchlets, however the type collection at Kew is entirely glabrous. All the other 13 taxa have glabrous branchlets and stems.

Leaves

The leaves of *Medinilla* provide one of the most useful taxonomic features which are constant for each taxon. Leaf arrangement is alternate in mature specimens of *M. alternifolia* Bl., however juvenile plants often have opposite leaves — one normal and one rudimentary. Eleven taxa have exclusively opposite leaves, e.g. *M. crassifolia* (Reinw. ex Bl.) Bl., *M. scortechinii* King, *M. succulenta* (Bl.) Bl., and *M. venusta* King. *M. selangorensis* Maxw. has opposite and 3-whorled leaves, however since I have seen only 5 collections of this species I am not entirely certain if this is a constant feature. Leaves in whorls of 3–4 (*M. clarkei* King and *M. speciosa* (Reinw. ex Bl.) Bl.) or 4–5 (*M. clarkei* King var. *crassiramea* (Hend.) Maxw. and *M. radicans* (Bl.) Bl.) are obvious features which immediately distinguish several taxa. All taxa except *M. alternifolia* Bl., which has serrulate blades, have entire blades.

The mid-nerve is always prominent and in *M. rubicunda* (Jack) Bl. and *M. succulenta* (Bl.) Bl. the only other longitudinal nerves are a pair of thin intramarginal ones. All the other taxa have at least 1 more pair of nerves which branch from near the base of the mid-vein. Eleven taxa have 1 pair of side nerves (3-plinerved) in addition to a pair of thin intramarginal ones, e.g. *M. crassifolia* (Reinw. ex Bl.) Bl., *M. pendens* Ridl., *M. radicans* (Bl.) Bl., *M. scortechinii* King, and *M. venusta* King. *M. clarkei* King has both 3 or 5-plinerved blades, while *M. clarkei* King var. *crassiramea* (Hend.) Maxw. is 5-plinerved. *M. alternifolia* Bl. is usually 5–7 plinerved and *M. speciosa* (Reinw. ex Bl.) Bl. has characteristically 2–4 pair of side nerves (5–9 plinerved).

Except for their length, the petioles are not a very useful structure for identification purposes. *M. penduliflora* Ridl., *M. scortechinii* King, *M. succulenta* (Bl.) Bl., and *M. venusta* King often appear sessile; however all the other taxa have distinctly petiolate blades. *M. speciosa* (Reinw. ex Bl.) Bl. can also be easily identified by its tuft of axillary bristles and unequal blade bases. All other taxa have minutely pilose or glabrous leaf axils and symmetric blades.

Inflorescence

The inflorescence of most taxa of *Medinilla* is cymose and often arranged in a panicle of cymes, however *M. alternifolia* Bl. has a glomerulate inflorescence and solitary flowers are often found on some species, e.g. *M. pendens* Ridl., due to a reduction of the inflorescence axes. An umbellate arrangement, again due to a shortening of upper axes, is frequently seen in several taxa, e.g. *M. clarkei* King. The inflorescence is axillary in most taxa, however *M. curtisii* Hk. f., *M. speciosa* (Reinw. ex Bl.) Bl., *M. varingiaefolia* (Bl.) Nayar, *M. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw., and sometimes *M. venusta* King have terminal inflorescences. The inflorescence can either arise from leafy axils (e.g. *M. crassifolia* (Reinw. ex Bl.) Bl. and *M. penduliflora* Ridl.), from leafless nodes (e.g. *M. radicans* (Reinw. ex Bl.) Bl. and *M. succulenta* (Bl.) Bl.), or from either leafy or leafless nodes (e.g. *M. clarkei* King var. *crassiramea* (Hend.) Maxw. and *M. selangorensis* Maxw.). While the nature of the inflorescence is distinct for many taxa, I have not found it as useful as the leaves or flowers for identification purposes.

Calyx

The calyx in all taxa except *M. pendens* Ridl. and *M. scortechinii* King, which have 5 (the former) or 4 (the latter species) undulate lobes, is completely truncate (*M. alternifolia* Bl., *M. crassifolia* (Reinw. ex Bl.) Bl., and *M. radicans* (Bl.) Bl.) or truncate with 4 (5 taxa) or 5 (5 taxa) cusps. *M. curtisii* Hk. f., *M. selangorensis* Maxw., and *M. venusta* King have both 4- and 5-merous flowers. The general shape is campanulate to cyathiform (e.g. *M. clarkei* King and *M. radicans* (Bl.) Bl.) or funnelform with a globose ovary (e.g. *M. varingiaefolia* (Bl.) Nayar). *M. clarkei* King var. *crassiramea* (Hend.) Maxw. and *M. selangorensis* Maxw. have furfuraceous calyces, while those of the other taxa are glabrous.

Petals

The petals in *Medinilla* are typically thin and showy. The shape varies from ovate to sub-orbicular with an acute or broadly rounded tip and truncate base. The petals are asymmetric in many taxa (e.g. *M. clarkei* King, *M. crassifolia* (Reinw. ex Bl.) Bl., and *M. venusta* King). In accordance with the number of calyx lobes, each taxon has 4 (8 taxa) or 5 (7 taxa) petals. *M. curtisii* Hk. f., *M. selangorensis* Maxw., and *M. venusta* King have 4 or 5 petals.

Anthers

The morphology of the anthers is a very important generic feature which easily distinguishes *Medinilla* from *Pachycentria* and *Pogonanthera*, however it is of limited use for identifying most *Medinilla* found in the Malay Peninsula. *Medinilla* has anthers with a dorsal crest or keel on the connective which is often spur-like near the filament, and a basal lobe-like extension at the base of each anther locule. *M. varingiaefolia* (Bl.) Nayar lacks a crest on its 4 long anthers, but the 4 short ones have a crest. *M. radicans* (Bl.) Bl., *M. variniaefolia* (Bl.) Nayar, and *M. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw. are the only taxa with dimorphic (4 long and 4 short) anthers from the Malay Peninsula. *M. curtisii* Hk. f., *M. selangorensis* Maxw., and *M. venusta* King have either 8 or 10 stamens, while 8 taxa have 8 stamens, and 7 have 10 stamens. The mature anthers in all taxa are slightly curved, 2-locular, and open with a single terminal, oblique pore at the tip of a thin rostrum.

Extra-Ovarial Chambers

Medinilla, as with most other genera of the Dissochaeteae, has 8 or 10 (according to the number of stamens) cylindric chambers between the calyx tube and ovary. These chambers are where the introrse bud anthers are inserted and with the elongation of the filaments, grow out of these chambers and eventually become erect. The chambers in *Medinilla* extend to about the middle of the ovary and are best seen in buds.

Medinilla varingiaefolia (Bl.) Nayar and *M. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw. are exceptional in that they do not have any extra-ovarial chambers or septa, and in this respect could easily be considered under *Pachycentria* (*P. varingiaefolia* (Bl.) Bl.). These two taxa are somewhat intermediate between the two genera since the shape of the calyx is more like that of *Pachycentria* than *Medinilla*. The anthers, as discussed above, of the two taxa convince me that they both should be included under *Medinilla*.

Gynoecium and Fruit

The stigma in *Medinilla* is typically minute and the style is slender, glabrous, and rises to a level slightly above the tip of the anthers. The inferior ovary is 4–6 loculed with numerous ovules on a parietal placenta in each. The fruit is a berry which is globose or somewhat oblong (*M. radicans* (Bl.) Bl.) with a thin exocarp, fleshy (often juicy) mesocarp, and numerous seeds. I have not found the gynoecium or fruit to be very useful taxonomically since there are many vegetative features that can be used to identify fruiting material.

Literary Review of *Pachycentria* and *Pogonanthera*

Clarke (1879), King (1900), Ridley (1922), and Bakh. f. (1943–45) all included *Pogonanthera pulverulenta* (Jack) Bl., on the basis of its unique anthers, as a distinct species ranging from the Malay Peninsula to New Guinea. *Pachycentria tuberculata* Korth. (= *Pachycentria constricta* (Bl.) Bl.) was included by King (1900) and Craib (1931) as the sole representative of the genus in the Malay Peninsula and Thailand, respectively; however Ridley (1922) added *Pachycentria speciosa* Ridl. (= *Medinilla varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw.). Bakh. f. discussed 6 species of *Pachycentria* from the Malay Archipelago including: *P. constricta* (Bl.) Bl., *Pachycentria microsperma* Becc., and *Pachycentria varingiaefolia* (Bl.) Bl. (= *Medinilla varingiaefolia* (Bl.) Nayar). He described as *sp. nov.* the other 3 species — all from New Guinea.

Medinilla variniaefolia (Bl.) Nayar should be included as a species of *Medinilla* rather than *Pachycentria* even though the shape of the calyx and absence of extra-ovarial chambers in this species are features of *Pachycentria*. The 8 anthers of *P. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw. are like those of *Medinilla*, while 4 anthers of the type species are like those of *Medinilla*, and the other 4 (long ones) are like *Pachycentria*. The size of the flowers of both taxa are larger than those of *Pachycentria* and on this feature alone the affinities lie with *Medinilla*. I have, therefore, accepted Nayar's transfer of *Pachycentria varingiaefolia* (Bl.) Bl. to *Medinilla varingiaefolia* (Bl.) Nayar. *Medinilla bakhuizenii* Nayar, except for the long anthers, is identical to *M. varingiaefolia* (Bl.) Nayar; therefore I have reduced the former to a variety of the latter, viz. *Medinilla varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw.

Medinilla maingayi Cl. has been recombined as *Pachycentria maingayi* (Cl.) Maxw. due to the shape of the calyx, absence of extra-ovarial chambers and septa, and the spurred (not crested or with locular appendages) anthers.

Comparative Morphologies of Medinilla, Pachycentria, and Pogonanthera

Vegetatively and with many structural features these three genera are very similar. Since *Pogonanthera* is not as closely related to *Medinilla* as *Pachycentria* is, the former has always been considered as a distinct genus and according to Bakh. f. consists of one polymorphic species, viz. *Pogonanthera pulverulenta* (Jack) Bl. *Pachycentria* and *Medinilla*, however, are easily confused and several species have been transferred from one to the other. The three species of *Pachycentria* and *Pogonanthera pulverulenta* (Jack) Bl. from the Malay Peninsula are all epiphytic shrubs with furfuraceous branchlets; opposite, entire, and 3-plinerved leaves; and small, 4-merous flowers, without extra-ovarial chambers or septa, *Pachycentria constricta* (Bl.) Bl. has flattened branchlets and a groove on each flattened face; while those of *Pachycentria microsperma* Becc. are flattened to 4-angled. The branchlets of *Pachycentria maingayi* (Cl.) Maxw. are cylindric, and a cylindric to 4-angled shape characterizes those of *Pogonanthera pulverulenta* (Jack) Bl. *Medinilla* has branchlets which range from cylindric, flattened and 2-grooved, to 4-angled and 4-winged. Most taxa of *Medinilla* have glabrous branchlets, however 3 are furfuraceous. The branches and stems of *Pachycentria* and *Pogonanthera* are smooth, while those of *Medinilla* range from smooth densely pustulate. *Medinilla* is also more variable in having taxa with alternate (1 species), opposite, and whorled leaves: and 1 to 9 main nerves.

The inflorescence of the 3 species of *Pachycentria* and *Pogonanthera pulverulenta* (Jack) Bl. is cymose, as in most species of *Medinilla*; however solitary flowers are often found on specimens of *Pachycentria maingayi* (Cl.) Maxw. due to a reduction in the length of the inflorescence axes. The inflorescence is usually terminal in *Pachycentria* and *Pogonanthera*, but *Pachycentria maingayi* (Cl.) Maxw. and *Pachycentria microsperma* Becc. often have axillary inflorescences in addition to the terminal ones. *Medinilla* has both terminal and axillary inflorescences. While all species of *Pachycentria* and *Pogonanthera pulverulenta* (Jack) Bl. have 4-merous flowers, *Medinilla* has species with both 4 and 5-merous flowers (3 having both 4 and 5 merous parts).

The anthers provide the most useful means for distinguishing the 3 genera, however when considering individual species of *Medinilla* and *Pachycentria* other features (e.g. leaves, calyx, fruit) must be examined. *Medinilla* includes all species that have anthers (8 or 10, equal or unequal) with a connective crest or keel (often spur-like near the filament) and a linear or lobe like extension

at the base of each locule. The anthers of *Medinilla* have, therefore, 3 appendages. The three species of *Pachycentria* from the Malay Peninsula have 8 equal (other species having 10, sometimes unequal) anthers with a spur-like extension at the base, without any crest or locule appendages. *Pogonanthera pulverulenta* (Jack) Bl., in addition to the auricled base of the blades, has unique anthers which are inappendiculate and have a tuft of bristles on the lower part of the connective. *Pachycentria* and *Pogonanthera* both lack extra-ovarial chambers and septa, in contrast to *Medinilla* which has 8 or 10 chambers and septa (according to the number of stamens), except in *M. varingiaefolia* (Bl.) Nayar and *M. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw. which lack these structures, which extend to about the middle of the ovary. The absence of these chambers is an exception in the Dissochaeteae and is, therefore an excellent means, along with the anthers, to distinguish *Medinilla* from *Pachycentria*. *Medinilla maingayi* Cl., considered as such by King and Ridley, is certainly *Pachycentria* by virtue of the shape of the calyx, absence of extra-ovarial chambers and septa, and spurred anthers without locular appendages. I have, therefore, recombined the species as *Pachycentria maingayi* (Cl.) Maxw.

Distribution and Abundance

In relation to the 3 species of *Pachycentria* and *Pogonanthera pulverulenta* (Jack) Bl. with *Medinilla* from the Malay Peninsula, *Pachycentria constricta* (Bl.) Bl. is common and is found throughout the region. *Pachycentria maingayi* (Cl.) Maxw. and *Pogonanthera pulverulenta* (Jack) Bl. are not as common, however they have been collected from scattered localities throughout the Peninsula. *Pachycentria microsperma* Becc., while rare in the Malay Peninsula, is more common in Sumatra and Borneo.

Generic Key to Medinilla, Pachycentria, and Pogonanthera

1. Anther connective crested, often spurred at the base, locules each with a basal appendage extra-ovarial chambers 8 or 10, extending to about the middle of the ovary (except in *Medinilla varingiaefolia* (Bl.) Nayar and *M. varingiaefolia* var. *bakhuizenii* (Nayar) Maxw.) *Medinilla*
1. Anther connective not crested, locules inappendiculate; extra-ovarial chambers not developed.
 2. Anther connective with a basal spur; locules each with up to 15 ovules; blades acute or rounded at the base *Pachycentria*
 2. Anther connective with a tuft of minute bristles; ovules c. 25 in each locule; blades usually auricled at the base *Pogonanthera pulverulenta* (Jack) Bl.

MEDINILLA Gaudichaud

Gaudichaud, Voy. S.M. l'Ukraine (1892) 484; De Candolle, Prodr. III (1828) 167; Naudin, Ann. Sci. Nat. Ser. III: 15 (1851) 285; Triana, Trans. Linn. Soc. 28:1 (1871) 95; Clarke in Hk. f. Fl. Brit. Ind. II (1879) 546; Cogniaux in DC. Monogr. Phanero. 7 (1891) 572; King, J. As. Soc. Beng. 69, II: 1 (1900) 59 (Mat. Fl. Mal. Pen., 467); Ridley, Fl. Mal. Pen. I (1922) 801; Craib, Fl. Siam. Enum. I: 4 (1931) 699; Bakh. f., Rec. Trav. Bot. Neerl. 40 (1943-45) 147; Henderson, Malay Nat. J. 4: 3 & 4 (1949) 132 and Malay. Wild Fls. I (1959) 132; Furtado, Gard. Bull. Sing. 20 (1963) 118; Nayar, Blumea 18:2 (1970) 567.

Epiphytic, rarely terrestrial shrubs; erect, less frequently creeping; stems smooth or pustulate, generally cylindric; leaves opposite, whorled, or in one species alternate; blades generally fleshy coriaceous; with 1, 3, 5, or 7 main nerves; flowers axillary or terminal, solitary or more commonly in cymose or umbellate inflorescences, generally showy and 4-5 merous; calyx campanulate or cyathiform to funnelform, truncate, often apiculate or shallowly lobed; petals thin, white or pinkish, sometimes asymmetric; stamens 8 or 10, uniform or dimorphic; anthers cylindric, tapered to the tip and opening by a single terminal pore; connective crested or not, with a basal appendage; locules each with a basal appendage in the shape of a tubercle, hook, or claw; filaments flattened; extra-ovarial chambers 8 or 10, extending to about the middle of the ovary; ovary inferior, 4-6 loculed, ovules numerous; fruit a berry, generally globose with a distinct calyx remnant; exocarp thin, ripening red or violet; seeds few to numerous, ovate to oblong, hilum frequently flattened, testa usually finely reticulate.

Medinilla, according to Airy-Shaw (Willis, Dict. Fl. Pl. & Ferns), includes about 400 species ranging from tropical Africa, Madascagar, the Indian sub-continent, Malay Peninsula, Philippines, Malay Archipelago, and the Pacific islands.

Key to the Species and Varieties of *Medinilla*

from the Malay Peninsula.

I. Inflorescence terminal

2. Calyx with 4 distinct cusps or 4 sub-marginal thickenings, petals 4.
 3. Stamens uniform *M. curtisii* Hk. f.
 3. Stamens dimorphic.
 4. Blades acuminate, sub-coriaceous, connective of long anthers without an appendage *M. varingiaefolia* (Bl.) Nayar var. *varingiaefolia*
 4. Blades obtuse, coriaceous, connective of long anthers with a basal spur *M. varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw.
2. Calyx with 5 cusps or 5 sub-marginal thickenings, petals 5.
 5. Branches 4-angled to 4-winged, smooth or with remote pustules.
 6. Nodes with setose bristles, leaves in whorls of 3 *M. speciosa* (Reinw. ex Bl.) Bl.
 6. Nodes without bristles, leaves opposite *M. curtisii* Hk. f.
5. Branches cylindric, densely pustulate *M. venusta* King

I. Inflorescence axillary, not terminal.

7. Inflorescence glomerulate, primary axes several from each axil, plant a root climber, leaves on mature plants alternate *M. alternifolia* Bl.
7. Inflorescence paniculate, cymose, umbellate, or of solitary flowers; primary axes generally 1 in each axil, shrubby (or with *M. radicans* a root climber); leaves opposite or whorled.
8. Inflorescence paniculate, cymose, or of solitary flowers; stamens uniform.

9. Calyx truncate or minutely 5-dentate, connective crested.
10. Stems and inflorescence axes cylindric or flattened; inflorescence up to 14 cm long.
11. Stems pustulate, sometimes only slightly; inflorescence 3–14 cm long.
12. Leaves whorled.
 13. Anther locules inappendiculate, leaves in whorls of 3, blades decurrent ($\frac{1}{2}$ to $\frac{3}{4}$ total length) on the petiole *M. selangorensis* Maxw.
 13. Anther locules appendaged, leaves in whorls of 4, blades not or very shortly (1–2 mm) decurrent on the petiole.
 14. Inflorescence axes and petioles glabrous or only sparsely furfuraceous
M. clarkei King var. *clarkei*.
 14. Inflorescence axes and petioles densely red brown furfuraceous
M. clarkei King var. *crassiramea* (Hend.) Mawx.
12. Leaves opposite.
 15. Blades decurrent on at least half the length of the petiole, calyx 6–9 mm long, fruit 8–9 mm wide *M. venusta* King.
 15. Blades not or only decurrent for $\frac{1}{3}$ the length of the petiole, calyx 4–6 mm long; fruit c. 6 mm wide.
 15. Pedicels c. 3 mm long, calyx 4 mm long, 3 mm wide, petals 5–6 mm long, 3 mm wide; anthers straight, 3–4 mm long
M. crassifolia (Reinw. ex Bl.) Bl.
 16. Pedicels c. 5 mm long, calyx 5–6 mm long 5 mm wide, petals 16–18 mm long, 9–11 mm wide; anthers "J" shaped, c. 8 mm long
M. laurifolia (Bl.) Bl. var. *ferrata* (Craib) Mawx.
11. Stems smooth, inflorescence 1.5–3 cm long *M. pendens* Ridl.
10. Stems and inflorescence axes 4-angled, smooth; inflorescence (10) 16–32 cm long *M. penduliflora* Ridl.
9. Calyx 4-denticulate to 4-lobed, connective not or only slightly crested.
 17. Blades at least 6.5 cm long, inflorescence at least 1.5 cm long.
 18. Inflorescence axes and calyx glabrous.
 19. Inflorescence 6–12 cm long, multiflowered, axes flattened and often winged, axes distinct; calyx lobes broadly triangular
M. scortechinii King
 19. Inflorescence 1.5–2.5 cm long, few flowered, axes cylindric, 3d axes not developed, calyx with 4 cusps (often sub-marginal).
 20. Upper branchlets slightly 4-angled to cylindric, smooth or with scattered pustules, petiole 1–3 mm long, calyx 3–4 mm long, 3 mm wide; petals 6–7 mm long, c. 4 mm wide *M. succulenta* (Bl.) Bl.

20. Upper branchlets cylindric, smooth, petiole usually more than 3 mm long; calyx c. 5 mm long, 4 mm wide; petals 12–14 mm long, c. 6 mm wide *M. rubicunda* (Jack) Bl.
18. Inflorescence axes and calyx minutely furfuraceous *M. selangorensis* Maxw.
17. Blades up to 3 cm long, inflorescence up to 1.5 cm long q.v. *Pachycentria maingayi* (Cl.) Maxw.
8. Inflorescence umbellate (secondary, etc. axes not developed), plant a root climber, stamens dimorphic *M. radicans* (Bl.) Bl.
1. *Medinilla alternifolia* Bl., Mus. Bot. Lugd.-Bat. 1: 2 (1849) 19. *M. scandens* King, J. As. Soc. Beng. 69, II: 1 (1900) 60; Ridley, Fl. Mal. Pen. I (1922) 801 *syn. nov.*

Root climber, stem closely appressed to tree trunks, 5–12 m long, with many adventitious roots up to 6.5 cm long, firmly rooted in the ground, slightly compressed and 2-grooved, red-brown hispid when young; becoming cylindric and up to 1 cm thick with a roughened, rugose-lenticellate, glabrous, tan-brown epidermis; wood in x-section with many radiating cavities; leaves on juvenile plants frequently opposite, with one large and one rudimentary leaf at each node or alternate where the smaller leaf has not developed; thin, but thickening with size and maturity of the plant; larger blades lanceolate to narrowly elliptic, margin minutely and widely serrulate, often with setaceous cusps; acute at the tip; rounded and shallowly (1–2 mm), sometimes unequally, auriculate-cordate at the base; venation pinnate with 2–3 pair of main nerves arising from the mid-nerve near the base, lowest pair very thin and not reaching the tip, generally 3-nerved at the tip, nerves sunken above, slightly raised below, drying brown above, lighter brown below; petiole dorsally grooved, setose, 2–8 mm long, 1.0–1.5 mm thick; small leaves generally about 1/10 to 1/5 the size of the larger ones, often ovate otherwise having a similar margin, texture, etc. as the larger blades; petioles similar, but shorter; leaves of mature (flowering) plants from the main stem or on thinner branches, alternate (infrequently opposite), sub-coriaceous, fleshy, glabrous, serrulate, broadly elliptic, ovate, or sub-orbicular; acute at the tip; acute or rounded, shortly decurrent, often unequally, at the base; venation pinnate, with 3–4 pair of nerves arising from the mid nerve near the base; lowest nerves intramarginal, thin, and incomplete; 5 (less commonly 3) nerved at the tip; nerves sunken above, raised and arching below; transverse venation pinnate, c. 20–25 pair, arising at 90° from the main veins, widely spaced, sunken above, raised below; 14–26 cm long, 7–15 cm wide; dull dark green above, pale green below, drying brown above, lighter brown and often with an olive hue below; petiole 5.5–20 cm long, 2–4 mm thick when dry, fleshy, glabrous, purplish-reddish; inflorescence glomerulate, on raised, irregular tubercles; 2–3 cm long, c. 1 cm wide, mostly from behind the leaves or in the axils of the oldest leaves; glabrous; primary axes numerous, especially from the lowest nodes, 5–20 mm long, c. 1 mm thick, unbranched with one node, or with 1–3 secondary axes 2–10 mm long each with 1 normal and sometimes 1 or 2 rudimentary flowers; pedicles 3–7 mm, or in solitary flowers up to 15 mm long, reddish; bracts squamose up to 0.5 mm long; calyx cyathiform-urceolate, truncate, smooth, glabrous, 7–8 mm long, c. 4 mm wide, green; petals 4, thin, ovate to oblong, acuminate at the tip truncate at the base, reflexed at maturity, sparsely hispid outside (especially in bud), glabrescent, 10–12 mm long, 6–8 mm wide, pinkish; filaments flattened, c. 6 mm long, 0.5 mm wide at maturity; anthers cylindric with a narrow and thin apical beak with one terminal pore, 5–6 mm

long, 1 mm wide, yellow; connective ridged and thickened, extended in a plano-convex or flattened spur, 1–2 mm long, often thickened; locules each with a minute claw at the base; stigma minute, curved to hooked; style cylindric, minutely and sparsely hispid, c. 10 mm long, 1 mm thick, white; fruit sub-globose, 8–9 mm long, 6–7 mm wide, on primary axes up to 25 mm long, and pedicles 8–20 mm long; calyx remnant c. 1 mm high, areolus 4 mm wide; exocarp smooth, glabrous, white then orange, black or dark brown when dry, pericarp c. 0.3 mm thick; seeds numerous, ovate, c. 0.5 mm long.

Figure 1: a. calyx, b. petal, c. stamen.

Distribution: shaded evergreen forests in central and Southern Malaysia, Sumatra and Borneo.

Distinct from all other species of *Medinilla* in the region with its creeping habit, and in mature plants alternate leaves, serrulate blades, and glomerulate inflorescence.

King notes that *M. scandens* King merely differs from *M. alternifolia* Bl. in having a much shorter connective spur, larger leaves, and more flowers in each inflorescence. Unfortunately, only one specimen in the type collection of *M. alternifolia* (Blume s.n., from Sumatra) at Leiden has flowers, and these are merely scraps of a few crushed buds. The bud anthers do, however, appear identical to Kiah 32048, which is obviously *M. alternifolia*, from the Malay Peninsula. The branches and leaves of these two specimens are identical. The number of flowers per inflorescence is variable, and in many collections from Sumatra and Borneo this factor does not correlate with the size of the leaves. *M. scandens* King is, therefore, entirely identical to *M. alternifolia*. The only other species that could be confused with *M. alternifolia* Bl. are *M. bisetosa* Bakh. f. and *M. barbata* Bakh. f. — the former having smaller blades with invisible secondary venation, and the latter with furfuraceous leaves and calyx tube.

MALAYSIA

Perak — Bujong Malacca: Curtis 3294; Bukit Kemunting, Taiping: Shah & Sidek 1182; Maxwell's Hill: Sinclair & Kiah 38804; Pandok Tanjong For. Res.: Spare 36301 (2243); Taiping Hills; Henderson 10393; Tapak: Ridley 14094; Tea Gardens: Ridley 2933; sine loco.: Cantley sn. Scortechini 150 (syntype *M. scandens* King).

Trengganu — Ulu Bendong. Kajang, Kemaman: Corner 30127; Kampong Bukit: Sinclair & Kiah 40448.

Pahang — Sungai Tahan: Shah 1415.

Johore — Mersing: Jumali & Heaslett 4448; Sungai Kayu: Kiah 32048, 32456, 32755, sn on 11 April 1936; Corner 32456, 32755.

2. *Medinilla clarkei* King, J. As. Soc. Beng. 69, II:1 (1900) 63; Ridley, Fl. Mal. Pen. I (1922) 803; *M. perakensis* King, l.c. 64 syn. nov.; *M. pahangensis* Ridl., J. Linn. Soc. 38 (1907–09) 310 syn. nov.; *M. clarkei* King var. *sumatrensis* Ohwi in *scheda* herb. Bogor, Leiden.

var. *clarkei*.

Epiphytic, rarely terrestrial, shrub up to 2.5 m tall; branches cylindric, c. 2 mm thick, often climbing with the aid of adventitious roots, glabrous or sparsely furfuraceous, sparsely to densely pustulate, epidermis purple, drying tan to light brown.

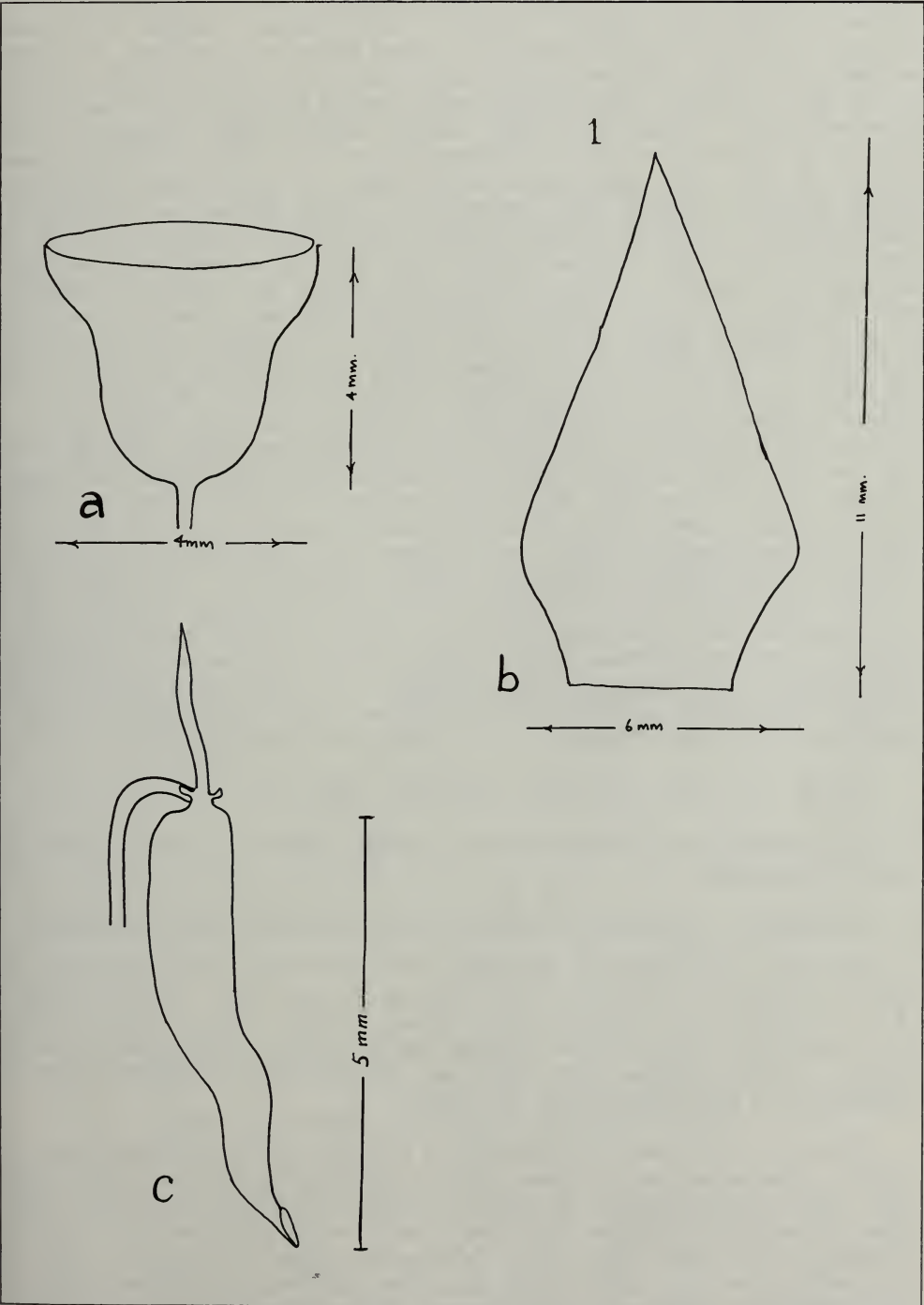


Figure 1. *Medinilla alternifolia* Bl., a-c Chew 346 (Sarawak).

wrinkled; stems up to 1 cm diameter, nodes prominent; leaves in whorls of 3 or 4; blades sub-coriaceous, elliptic, obovate to sub-orbicular, rounded at the tip, rounded or narrowed and decurrent, or in larger blades often shallowly (c. 1 mm) auricled at the base; midnerve sunken above, raised and tapering below, with one or two pair of thinner, often obscure, nerves arising from near the base (3 or 5 plinerved) which parallel the margin and in smaller blades disappear in the upper $\frac{3}{4}$ of the blade; transverse venation obscure or invisible; 3.0–9.5 cm long, 1.0–5.0 cm wide; dark green above, whitish-green often tinted with red below; drying brown to blackish above, lighter brown below, texture on both surfaces rughened when dry; petiole cylindric, sparsely furfuraceous to glabrous, 0.6–3.5 cm long, 1.0–1.5 mm thick, frequently with a small patch of minute red-brown hairs in the axils, reddish to purple; inflorescence cymose, less commonly umbellate with reduced axes, rarely of solitary flowers, typically many flowered, from leafy or more commonly leafless nodes 2–6 (8) cm long; axes cylindric, smooth, sparsely furfuraceous to glabrous, pink to maroon; bracts and bracteoles lanceolate, acute, 0.5–0.75 mm long; primary axes generally solitary, (0.5) 1–4 cm long with 1–3 nodes; secondary axes 3–5, whorled, 0.6–1 cm long, 3d axes not developed or up to 5 mm long; pedicels 4–5 mm long; calyx campanulate, often widened at the rim, truncate with 5 thickened cusps or thickened points just below the margin; 3–6 mm long, 2–5 mm wide, pink or maroon; petals 5, thin, obovate, tip usually asymmetric and rounded with a thickened mucro, narrowed and truncate at the base, venation distinct, 6–14 mm long, 4–8 mm wide, pale pink to (waxy) white; stamens 10, infrequently 12, uniform; filaments flattened, 4–5 mm long, anthers 3–5 mm long, nearly straight or slightly curved, yellow, connective crested, often with a minute spur at the base, locules each with a curved to hooked appendage up to 0.5 mm long at the base; stigma capitate, minute; style slender, c. 5 mm long; fruit globose, 6–8 mm diameter, areolus slightly (c. 0.5 mm) raised, 4–5 mm wide; exocarp thin, whitish, yellowish, green, blueish-red, then purple when ripe; seeds numerous, ovate, hilum flattened, c. 1 mm long, testa finely reticulate.

Figure 2: a. calyx, b. petals, c. stamens. Plate 1.

The combination of whorled leaves, pustulate stems, and truncate calyx distinguish this species.

Distribution: Malaysia and Sumatra; generally above 1000 m elevation.

King (l. c. 64) noted that specimens of *M. clarkei* King were incorrectly referred by Clarke (Fl. Brit. Ind. II (1879) 547) as *M. rosea* Gaud. The descriptions of *M. rosea* Gaud. by Cogniaux (Mono. Phan. 7 (1891) 573) and Bakh. f. (Rec. Trav. Bot. Neerl. (1943–45) 154) indicate that the species has fascicled, 4-merous flowers; smooth branches, etc. which are unquestionably different from the specimens that King described as *M. clarkei*.

Medinilla clarkei varies considerably in the shape and size of the leaves and King (l. c. 64) states that specimens with the largest leaves are from higher elevations. With many specimens on hand it is apparent that this is not true — both large and small leaved plants have been collected at all elevations up to 2300 m. Purseglove 4243, from Fraser's Hill, Pahang; has large leaves and was collected at c. 1600 m elevation; H.M. Burkill 835, from the Cameron Highlands, Pahang; also collected at c. 1600 m, has small leaves. The inflorescences of both specimens are c. 5 cm long. Ridley (l.c. 804) notes that specimens from Selangor have larger, thinner leaves with conspicuous nerves and larger cymes than specimens collected elsewhere which have small, fleshy leaves with no visible side nerves and dense cymes. Several specimens show that this observation is not always true,

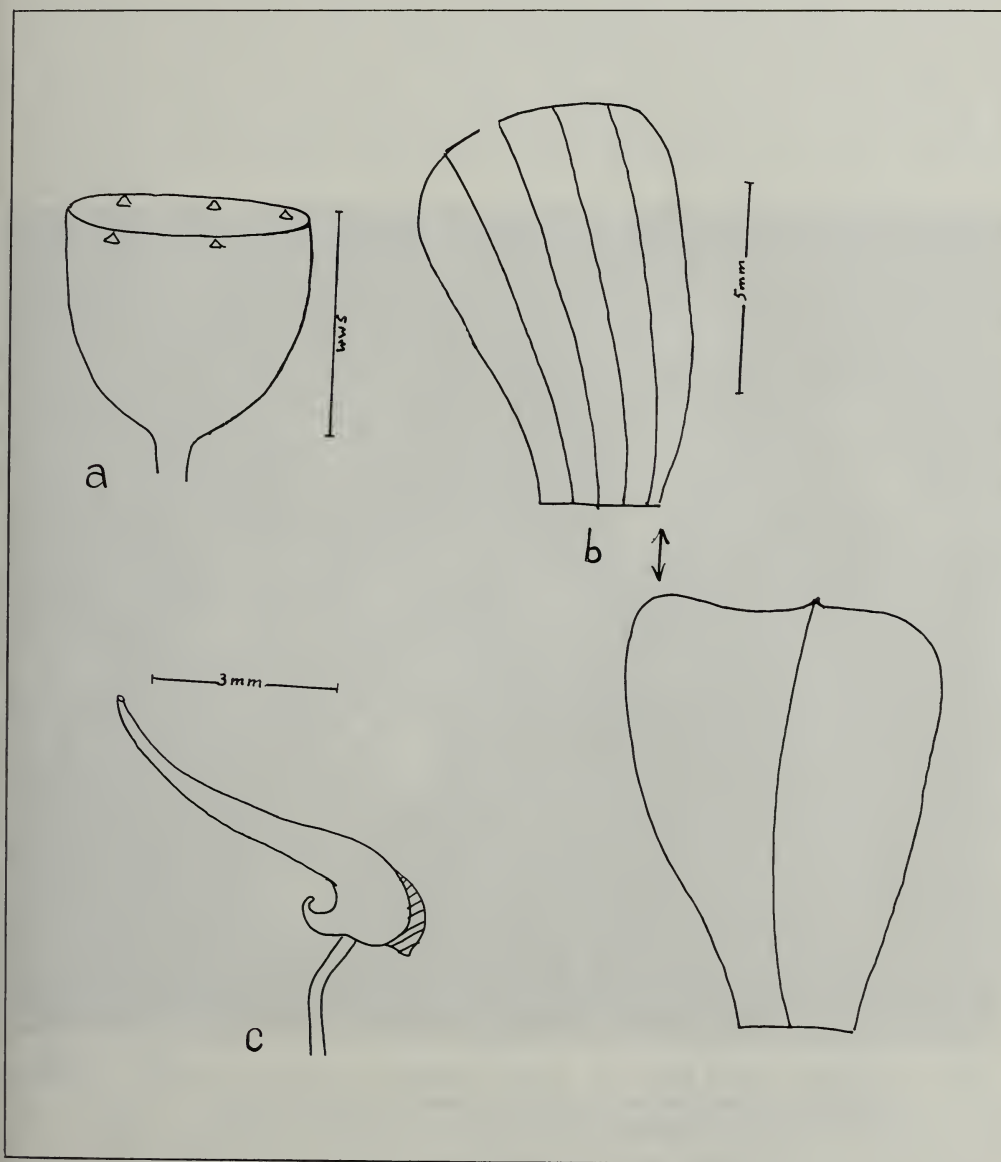


Figure 2. *Medinilla clarkei* King, a-c Jumali 710 (3917).



Plate 1. *Medinilla clarkei* King var. *clarkei*. Maxwell 78-150 from the top of Gunong Brinchang in the Cameron Highlands, Pahang on 14 April 1978.
Photo: Dr. Ivan Polunin.

e.g. Derry 616 (Malacca), Haniff 3922 (from Gunong Kerbau, Perak at 2300 m), and H.M. Burkill 835 which have small leaves and a relatively large inflorescence; and Wray & Robinson 5312 (Pahang) which has large leaves and solitary flowers on primary axes 0.5 mm long. Ridley 16037, which has the largest leaves and most expansive inflorescence on any specimens examined, is from Pahang. Generally speaking there is no correlation between small leaves and the size of the inflorescence, however almost all the large leaved specimens have a large inflorescence.

Medinilla pahangensis Ridl. is identical to *M. clarkei* in flower structure, fruit, and seeds; and its small leaves with a relatively short inflorescence (up to 2.5 cm) also compare closely with some specimens of the latter. The isotype of *M. pahangensis* (Wray & Robinson 5396) is from Gunong Tahan, Pahang.

Ridley notes that *M. pahangensis* resembles *M. hasseltii* B1. (= *M. crassifolia* (Reinw. ex B1.) B1.) in general appearance, however these two species are only similar in having pustulate stems, similar inflorescences, and asymmetric petals. The opposite leaves, larger blades, truncate calyx which lacks cusps, and the different anthers of the latter are distinguishing features.

Medinilla perakensis King is distinguished on the basis of its larger, 5-nerved blades, longer petioles, and slightly longer inflorescences. The pustulate stem, whorled arrangement of the leaves, structure of the inflorescence, flowers, fruit, and seeds of this species and *M. clarkei* are the same. *M. perakensis*, in my opinion, is the same as *M. clarkei* since in several collections from Sumatra the two species are indistinguishable, i.e. specimens could be named as either one. Bunnemeyer 2877 and van Steenis 9576 have the typically large, 5-nerved blades of *M. perakensis*, but the latter specimen also has some 3-nerved blades which are characteristic of *M. clarkei*. Bakh. f. identified Bunnemeyer's collection as *M. clarkei*. *M. clarkei* is restricted to the Malay Peninsula and Sumatra with most collections having smaller, 3-nerved blades which match the type specimens of *M. clarkei*.

Ohwi identified two collections from Sumatra (van Steenis 8340, 9576) as *M. clarkei* King var. *sumatrensis* Ohwi. Both specimens are unquestionably *M. clarkei* which have slightly larger blades than in the syntypes. These two collections (378, syntype) were collected from 2000–2300 m elevation.

MALAYSIA

Perak — Gunong Benom: Fed. Mal. States Mus. sn. 26 July 1925; Gunong Bubu: Ng 6153, Straits sn; Gunong Batu Puih: Wray 378 (*syntype M. perakensis* King); Gunong Bubu Puteh, Larut: Wray 412 (*syntype*), 3831 (*syntype*); Gunong Inas: Wray 4084 (*syntype*), Yapp 469; Gunong Kerbau: Haniff 3922, Robinson sn in June 1913; sine loc.: Cantley sn; *Scortechini* 243 (*syntype*), sn.

Kelantan — Gunong Rabong: Soepadmo & Mahmud 1096, Whitmore 20662.

Trengganu — Gunong Lawit Besut: Cockburn 8222; Gunong Mandi Angin: Whitmore 10290; Gunong Padang: Moysey & Kiah 31871.

Selangor — Bukit Kutu: Ridley 7314, 8031; Genting Highlands; Shah & Ali 2990; Gunong Mengkuang: Robinson sn on 18 Jan. 1913; Gunong Nuang: Whitmore 12189; Gunong Semangkok: Ridley 15607; Gunong Ulu Kali: Burn-Murdoch sn in 1910; Maxwell 78–80; Hulu Semangkok; Ridley sn; Ulu Saugat: Kloss sn in Feb. 1912.

Pahang — Cameron Highlands: H.M. Burkill 835; Chew 233, 791, 1245; Henderson 11024, Melville & Landon 4832, Nur 32556, Strugnell 23913; Symington 20996, 31011; Fraser's Hill: H.M. Burkill 2321; H.M. Burkill, Shah, Noor 2385; I.H. Burkill & Holtum 8557, Cubit 11141, D.F.O. 22494, Foxworthy 4803; Henderson 11225, 17876, 23324; Henderson & Nur 10536, Moe 77; Purselove 4288, 5523; Shah & Noor 657; Gunong Benom: Fed. Mal. States. Mus. sn on 9 Aug. 1925, Strugnell 22316, Whitmore 3306, Keng & Hons. Stud. 6; Gunong Berembun: Ng 5901, Ogata 110268, Whitmore 15496; Gunong Brinchang: Maxwell 78–150; Gunong Jasar: Whitmore 15465; Gunong Tahan: Haniff & Nur 8028, Ridley 16037; Wray & Robinson 5312, 5396 (type *M. pahangensis* Ridl.); Gunong Tapis: Cockburn 11045, Symington & Kiah 28856; Gunong Terbakor: Henderson 10989; Kluang Terbang: Barnes 10866; Robinson Falls: van Balgooy 2648; Taman Negara: Soepadmo 902.

Malacca — Gunong Mersing: Ridley 32281; Mt. Ophir: Derry 616, Jumali 710 (3917), Maingay 769 (2732) (*syntype*), Ridley sn in Dec. 1898, Shah & Ahmad 3576; sine loc.: Griffith 2282 (*syntype*).

Johore — Gunong Ledang: Whitmore 12363.

3. *Medinilla clarkei* King var. *crassiramea* (Hend.) Maxw. *comb. nov.*; *M. crassiramea* Hend., Gard. Bull. Str. Settl. 7:2 (1933) 103.

Epiphytic (or terrestrial when on peat soil) shrub up to 2 m tall, branches cylindric, often slightly ridged in places, densely red-brown furfuraceous, younger branches sparsely pustulate, c. 5 mm thick; older branches mostly glabrous, densely pustulate-tuberculate, up to 12 mm thick; epidermis drying khaki-tan, with a rugose texture; nodes thickened; leaves in whorls of 4 or 5; blades coriaceous, broadly illiptic, ovate, to sub orbicular, obtuse and frequently with a 1 mm long cusp which is often sunken (emarginate) at the tip; rounded and shallowly (2–4 mm) auriculate-cordate at the base; midnerve with 2 prominent and one thin (intramarginal) pair of nerves arising from near the base, sunken above, raised and tapering below; transverse venation obscure to invisible, especially below; immature blades sparsely furfuraceous above, more densely (especially on the nerves) below, glabrescent; 11–15 cm long, 6.5–9 cm wide; medium glossy green above, paler and dull green below; drying brownish, often with an olive-green hue above, brown below, texture roughened on both surfaces; petiole densely red-brown furfuraceous, less so with age, 2–5 cm long, 3–4 mm thick, axils provided with a dense cushion of red-brown hairs; inflorescence a panicle of cymes, up to 7 cm long and about as wide many flowered, from leafy or upper leafless nodes; axes cylindric, spreading, densely red-brown furfuraceous; bracts and bracteoles lanceolate, acuminate, densely red-brown furfuraceous, c. 1 mm long; primary axes solitary, 3–4.5 cm long, c. 2 mm thick, with 1–3 nodes; secondary axes whorled, 1–2 cm long with 1 or 2 nodes; 3d axes not developed or 2–3 mm long; pedicels 1–2 mm long; calyx campanulate, truncate with 5 thickened cusps from below the rim, sparsely red-brown furfuraceous, glabrescent, 3–4 mm long, 3.5 mm wide; petals 5, thin, obovate to sub-orbicular, broadly rounded with a thickened cusp at the tip, narrowed and clawed at the base, 5–5.5 mm long, 3–5 mm wide (according to Henderson, l.c., 2 usually larger and broader than the other 3); stamens 10, uniform; filaments flattened, c. 3 mm long; anthers c. 2.5 mm long, slightly curved, narrowly crested with a minute claw at the base; locules each with a minute spur at the base; stigma capitate, minute; style c. 4.5 mm long; fruiting axes slightly longer and thicker; fruit globose, 3–4 mm diameter, areolus slightly (c. 1 mm) raised, c. 3 mm wide; exocarp thin, white flushed with pink, blueish when ripe; seeds numerous, c. 1 mm long, ovate, hilum flattened, testa finely reticulate, glossy tan.

Figure 3: a. calyx, b. petals, c. stamen, d. seed.

As Henderson notes in his description, this plant is very close to *M. perakensis* King (now a synonym of *M. clarkei* King) which has sparsely pustulate stems, 3–5 plinerved blades, and being glabrous, or nearly so, in all its parts. All three specimens of var. *crassiramea* in the Singapore collection are from the Cameron Highlands, which is within the range of distribution of *M. clarkei*. Since all the collections of *M. clarkei* at Singapore and Leiden have at the most sparsely furfuraceous branches, leaves, and inflorescences; all of which become glabrescent with age; var. *crassiramea* is distinct and can be easily separated on the basis of its pubescence. Generally speaking, the leaves of *M. clarkei* are smaller and 3-nerved, and specimens with larger, 5-nerved blades which were designated by King as *M. perakensis*, are also essentially glabrous. I have not seen any specimens that could possibly link *M. clarkei* and var. *crassiramea*; therefore I have considered the latter as a separate taxon.

Pahang — Cameron Highlands: Stone 8026; Gunong Batu Brinchang: H.M. Burkill 799, Henderson 23588 (*type*), Ng 5980, Sinclair 9947, Whitmore 15541.

4. *Medinilla crassifolia* (Reinw. ex Bl.) Bl., *Flora* 14 (1831) 511; *Melastoma crassifolium* Reinw. Bl., *Bijdr. Fl. Ned. Ind.* 17 (1826) 1075; *Medinilla crassifolia* (Reinw. ex Bl.) Bl. var. *hasseltii* (Bl.) Bakh. f., *Rec. Trav. Bot. Neerl.* 40 (1943-45) 189 and *Medinilla hasseltii* Bl. l.c. 513; King, *J. As. Soc. Beng.* 69, II: 1 (1900) 62; Ridley, *Fl. Mal. Pen.* I (1922) 802 *syn. nov.*

Epiphytic shrub up to 3 m tall, climbing, or scrambling; branchlets cylindric, glabrous, 1.5–2 mm thick; at first smooth, later with scattered, black pustules; stem cylindric, glabrous, sparsely to densely black pustulate, 5–8 mm thick, becoming more rugose with age; adventitious roots common from leafless nodes; blades coriaceous, opposite, glabrous, lanceolate or elliptic, acuminate at the tip (acumen 1.0–1.5 cm long), narrowed and somewhat rounded at the base, not or only slightly (1–2 mm) decurrent on the petiole; mid-nerve with a thin pair of intramarginal nerves from the base, 1–2 mm from the margin, and a more prominent pair of arching nerves from above the base, venation sunken above, raised and tapering below; transverse venation extremely obscure to invisible on both surfaces; (6) 10–19 cm long, (2) 3.0–8.0 cm wide; dark green, drying with a roughened texture on both surfaces, brown above, lighter brown below; petioles mostly cylindric to somewhat flattened, 6–8 mm long, 2.0–2.5 mm thick, glabrous, red, drying with a roughened texture; with a small, dense, axillary tuft of minute hairs which are lost with maturity; inflorescence cymose, glabrous, from leafy axils, 1–3 cm long, many flowered, bracts and bracteoles lanceolate, acute, c. 0.5 mm long; axes cylindric, or somewhat flattened, sparsely pustulate, red; primary axes 1 or 2 from each axil, 7–12 mm long, c. 2 mm thick, with 1–3 nodes, secondary axes whorled, 5–8 mm long with 1 or 2 nodes, 3 mm axes not developed or 1–2 mm long, pedicels c. 3 mm long; calyx campanulate to cyathiform, truncate, smooth, glabrous, 4 mm high, 3 mm wide; pink; petals 4 or 5, thin, obovate, asymmetric at the broadly rounded tip with an oblique, thickened cusp, venation distinct, 5–6 mm long, c. 3 mm wide, reflexed at maturity, creamy white or translucent white; stamens 8 or 10, filaments flattened, c. 3 mm long, purple; anthers cylindric, straight with a slight curve at the tip, mauve-purple, red; connective crested with an appendage; locules each with a linear lobe; connective and all three appendages black; c. 3–4 mm long; stigma capitate, minute; style slender, 6 mm long; fruit globose, smooth, glabrous, 6 mm diameter, on pedicels up to 6 mm long, areolus 4–5 mm wide; pericarp thin; immature fruit pink, red when ripe; seeds numerous, ovoid, hilum flattened, testa minutely reticulate, c. 1 mm long, light brown.

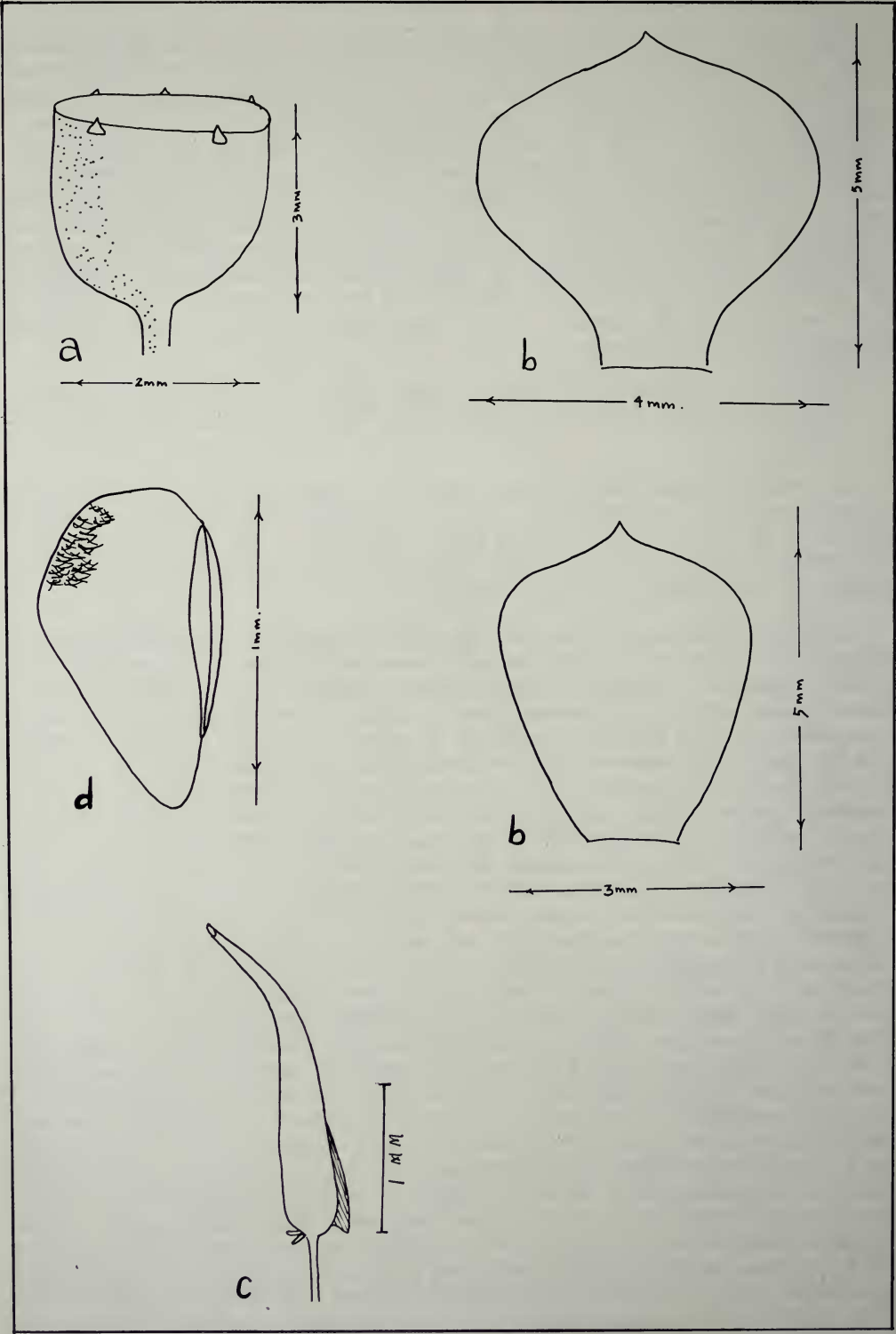


Figure 3. *Medinilla clarkei* King var. *crassiramea* (Hend.) Maxw., a-d Henderson 23588 (isotype).

Figure 4: a. calyx, b. petals, c. stamen.

Uses: leaves made into a medicine for headaches; leaves added to curries for a sour taste.

Habitat: shaded, moist evergreen forests up to c. 1500 m elevation; on rocks or trees.

Distribution: central Malaysia, Singapore, Sumatra, Borneo, and Java. Vernacular: akar nupal, assam lokan puteh (Negri Sembilan), assam bongkor (Johore) senudok ayer (Selangor).

This species is very closely related to *M. venusta* King (q.v.) which has larger flowers, different anthers, and sub-sessile leaves. *M. scortechinii* King (q.v.) is also very similar, but has a lobed calyx, longer inflorescence, and sub-sessile leaves. The anther appendages of *M. crassifolia* and *M. scortechinii* are nearly the same, however there is no connective crest with the latter. *Medinilla laurifolia* (Bl.) Bl., with a wider distribution from Sumatra to the Celebes, is another close species which differs in having smaller and thinner leaves, few flowered inflorescences, and larger flowers and fruit.

The holotype of *M. hasseltii* Bl. at Leiden is a fruiting collection which is virtually indistinguishable from many specimens of *M. crassifolia*. The calyx of *M. crassifolia*, especially in bud, is either entirely truncate or has 5 minute cusps. The areolus in mature fruit is truncate and I have not seen any specimens with distinct cusps. The type specimen of *M. crassifolia* var. *diaphana* (Bl.) Bl., which Bakh. f. (l.c. 188) correctly reduced to *M. crassifolia* differs from the holotype of *M. hasseltii* in having slightly longer petioles. The holotype of *M. crassifolia* is vegetative, however the petioles in this collection are also longer than those of *M. hasseltii*. Several collections identified by Blume and Bakh. f. as *M. crassifolia* have shorter petioles and in this respect could also be identified as var. *hasseltii* (Bl.) Bakh. f.

Collections from the Malay Peninsula clearly show that the length of the petiole is variable since in many collections it is difficult to say whether the specimen is *M. crassifolia* or var. *hasseltii*, e.g. Stone 4790, and Whitmore 12608. The flowers and fruit of the Malay collections show some variation in size and again it is not clear in some specimens as to which of these two taxa the specimen belongs.

Since I cannot adequately separate *M. crassifolia* from its var. *hasseltii*, especially with fruiting material, I have found no reason to retain the variety.

Ridley reduced *M. hasseltii* Bl. var. *griffithii* Cl. to a synonym of *M. hasseltii* Bl. The holotype of var. *griffithii* (Griffith 2282), from Malacca, is clearly the same as *M. scortechinii* King (q.v.).

MALAYSIA

Kedah — Gunong Bintang For. Res.: Sidek 267, 279.

Perak — Bruas, Dindings: Ridley sn in March 1896; Bujong Malacca: Curtis 3157, Ridley sn in Sept. 1898; Bukit Batu Suloh, Kinta Forest: Allen & Kadim 482; Changkat Jong For. Res.: Ng J 5645; Dindings: Curtis 3448; Gunong Bubu For. Res.: Hou 671, Whitmore 0640; Larut: King's collector 1961; Larut Hill: Curtis = 3448; Maxwell's Hill: Hardial & Samsuri 293; Pangkor, Dindings: Curtis 1642; Relau Tujor: Wray 1843; Slim Hills For. Res.: Whitmore 0850; Taiping Hill: Henderson 10112; Tea Gardens: Curtis 2715, Ridley sn in 1891; Taiping: King's collector 8507; Trolak For. Res.: Chelliah 104672.

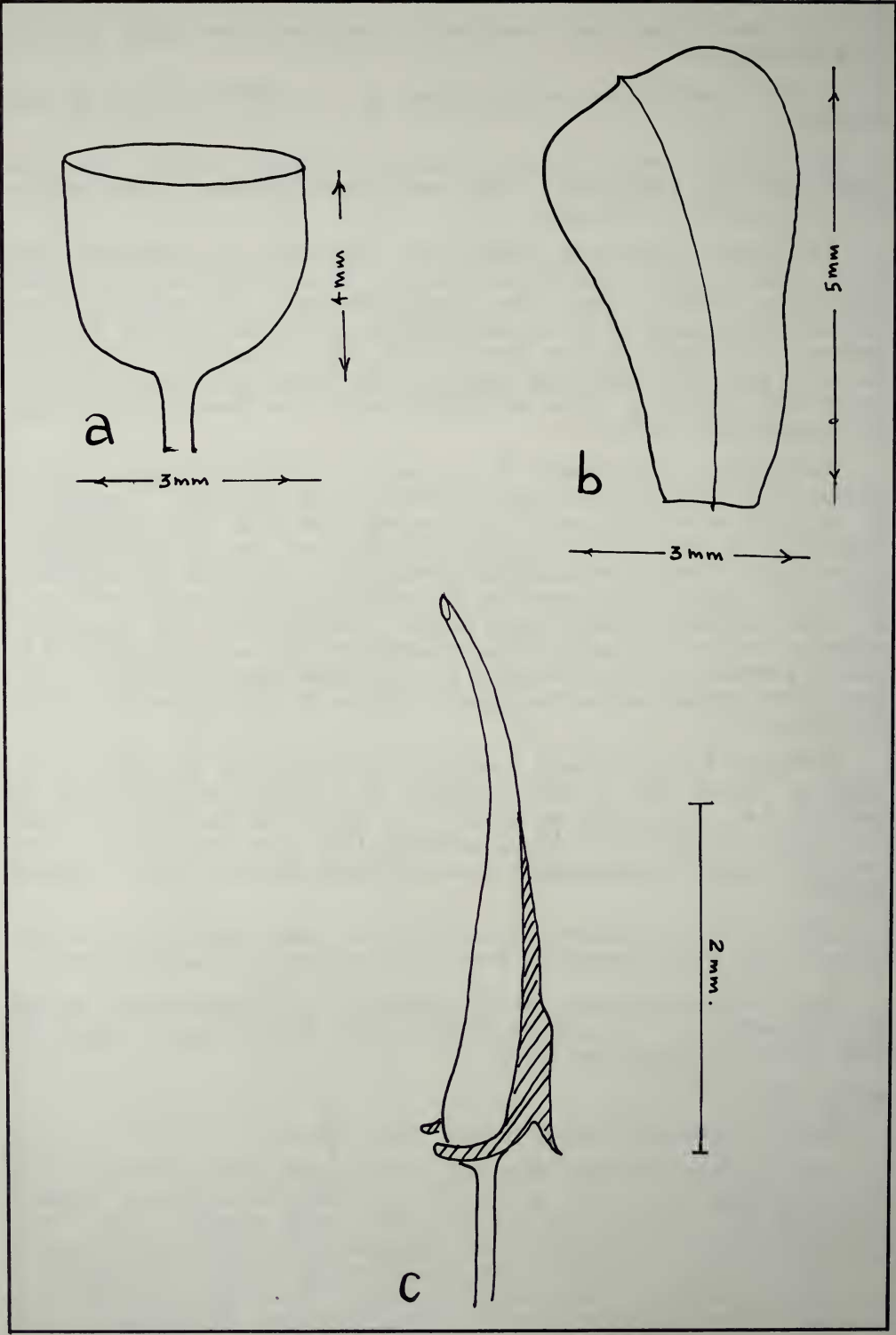


Figure 4. *Medinilla crassifolia* (Reinw. ex Bl.) Bl., a-c King's coll. 8507.

Kelantan — Gua Namik: Henderson 19726; Sungei Lebir: Henderson 29649.

Trengganu — Bukit Kajang, Kemaman: Corner sn; Gunong Padang: Whitmore 12608.

Selangor — Bukit Batu Berkingding, Kanching: Nur 34360; Gading For. Res.: Chelliah 98230; Kanching Reserve: Jaamat 12756; Klang Gates: Hume 7100; Kuala Lumpur: Curtis 2334; Rawang: Melville 4758; Semengon: Hume 8138; Sungai Tua: Loury sn; Telok For. Res., Klang: I. H. Burkill 6620, 7031; Ng 1974; Ulu Gombak: Jaamat 10922; sine loc.: Ridley sn. on 21 July 1889.

Pahang — Bentong: Best 13863; between Pekan and Ayer Tanar: I.H. Burkill & Haniff 17260; Pramon: Ridley 1055; Sabai Estate, Bentong: Shah 149; Sungai Tahan: Shah 1402; Tahan Reserve: Haniff & Nur 8076; Tahan River: Ridley sn in Aug. 1891.

Negri Sembilan — Bukit Sutu: Alvins 1981; Gunong Angsi: Nur 11763; Kupayang: Alvins 2205.

Malacca — Gunong Ledang: Ridley sn; Mardima Reserve: 2039; sine loc.: Maingay 797 (1419).

Johore — Alor Bukit: Hardial 539; Bukit Badak: Hassan & Kadim 38; Gunong Belumut: Holttum 10738; Gunong Muntakak: Nur 19970; Gunong Panti: H.M. Burkill 3428, H.M. Burkill & Sanusi 3170, Chew 732, Cockburn 7844; Holttum 18074, 19853, Jumali 14; Kuswata 425 sn on 1 Aug. 1960; Ridley sn in 1892, Samsuri 312, Stone 4790; Gunong Pulai: Best 7701, H.M. Burkill 2572, Keng 3298 (K778), Mat 371, Sinclair 39554; Hadyi Serawi: Ridley sn in Nov. 1900; Kota Tinggi: Shah, Noor, Shukor 2096; Kuala Sedili Road: H.M. Burkill 1961, 2669; Kadim & Noor 149. Shah & Noor 820; Kukut: Ridley 13251, sn in 1908, sn in 1909; Labis For. Res.: Jumali 4224 (K6685), Shah & Samsuri 1698; Layang Layang: Holttum 29351; Mt. Ophir: Whitmore 12301; Pengkalan Paja, Pontain: Ngadiman 36642; Sungai Juasseh, Labis: Shah & Shukor 2276; Sungai Kayu: Kiah 31980; Sungei Sedili: Corner 26054; Sungai Tahan: Ridley sn in April 1903; Taiping River: Ridley sn in 1894; Tanah Runto: Goodenough sn; Ulu Sungei, Segamat: Samsuri & Shukor 666; sine loc.: Lake & Kelsall sn in Oct. 1892.

Singapore — Cantley sn, Goodenough sn at Seletar in 1890; Ridley 273, 286, sn: in 1890, in 1892, in 1894, in 1909; Spare 904; Wallich cat. 4084.

5. *Medinilla curtisii* Hk. f., Gar. Chron. 20 (1883) 621, fig. 108; and Curtis's Bot. Mag. (1883) tab. 6730; *Medinilla elliptica* Craib, Kew Bull. 1930, 322 *syn. nov.*; *M. elliptica* Craib var. *tetramera* Craib, Fl. Siam. Enum. I: 4 (1931) 699 *syn. nov.*

Epiphytic shrub, youngest branchlets obscurely 4-angled or 4-lined, becoming cylindric, smooth or with a few small pustules, drying khaki-tan, 2–3 mm thick, glabrous; leaves opposite, axils glabrous; blades sub-coriaceous, elliptic to ovate, acute at the tip, rounded and decurrent or shallowly (1–2 mm) cordate at the base, mid-nerve with one pair of prominent lateral nerves from near the base, intramarginal nerves very faint, c. 1 mm from the margin; 7–11.5 cm long, 3–4.5 cm wide, drying greenish above, brownish-greenish below; petiole 1.0–1.5 mm long, c. 2 mm thick, glabrous; inflorescence terminal, a panicle of cymes, many flowered, 4–5 cm long; axes 4-angled, often with 4 membranous wings, sparsely

furfuraceous, later mostly glabrous; bracts and bracteoles lanceolate, acute, up to 0.5 mm long, caducous; primary axes 1–3 at each tip, 1.5–2 cm long with 1 node; secondary axes 3–5, 6–10 mm long, 3d axes 4–6 mm long, pedicels 8–10 mm long; calyx campanulate, smooth, sparsely furfuraceous, glabrescent, c. 5 mm long, 4–5 mm wide, margin truncate with 4 or 5 sub-marginal cusps; petals 4 or 5, thin, obovate, broadly rounded and often asymmetric with a cusp at the tip, narrowed to a claw at the base, 11–12 mm long, 5–6 mm wide, pink or white; stamens 8 or 10, equal; filaments c. 9 mm long; anthers slightly curved, opening with a single pore at the thin, rostrate tip, c. 7 mm long, connective with a thin keel near the base which is often spurred, locules each with a thickened bulbous-oblong appendage, c. 0.5 mm long; stigma minute, style c. 14 mm long; fruiting axes slightly longer; fruit urceolate, c. 6 mm long, 7 mm wide, areolus c. 5 mm wide; exocarp membranous, drying tan; seeds numerous, ovoid, c. 1.5 mm long; testa finely reticulate, glossy tan.

Figure 5: a. calyx, b. petal, c. stamen.

This species is easily distinguished from all others in the region by its terminal inflorescence with 4-angled axes; smooth, angled branchlets; and opposite, subsessile leaves. *M. venusta* King (q.v.) has similar inflorescences and flowers, especially the stamens, but differs in having pustulate branches. *M. scortechinii* King (q.v.) has larger, thicker blades, a 4-lobed calyx, and axillary inflorescences.

The holotypes of *M. elliptica* Craib (Kerr 16779) and *M. elliptica* Craib var. *tetramera* Craib (Kerr 12054) — both from peninsular Thailand, match the description and illustration of *M. curtisii* in Curtis's Botanical Magazine. *M. curtisii*, described from a specimen collected on the west coast of Sumatra by Curtis, is an apparently rare species since only a few collections of it exist. I have not seen any collections of this species from Malaysia, however, with a distribution from lower Thailand to Sumatra it is most probable that it grows in Malaysia.

The distinction of *M. elliptica* Craib var. *tetramera* Craib is, in my opinion, not justified since the number of flower parts is the only difference. Vegetatively and structurally the two taxa are identical. *M. venusta* King is similar in respect to having both 4 or 5-merous flowers.

THAILAND

Ranong — Kao Panta, Chongdon: Kerr 16779 (type *M. elliptica* Craib)

Surat — Kao Nom Sao, langsuan: Kerr 12054 (type *M. elliptica* Craib var. *tetramera* Craib).

6. *Medinilla laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw. comb. nov.: *M. ferrata* Craib, Kew Bull. 1930, 323.

Epiphytic shrub, often with adventitious roots, upper branchlets cylindric, covered with small pustules and tubercles, texture very rough and wrinkled when dry, glabrous (ferrugineous, exceptionally glabrous, according to Craib), 3–4 mm thick, drying greyish; older branches up to 8 mm thick, epidermis thin; leaves opposite, with a minute cushion of ferrugineous hairs; blades sub-coriaceous, glabrous, elliptic, mid-nerve with 1 pair of prominent nerves from near the base, intramarginal pair very thin, c. 1.0–1.5 mm from the margin; obtuse to acute at the tip, narrowed and decurrent (c. $\frac{1}{3}$ the length of the petiole) at the base; 7–18 cm long, 4–7.5 cm wide; drying with a roughened texture, olive-greenish above,

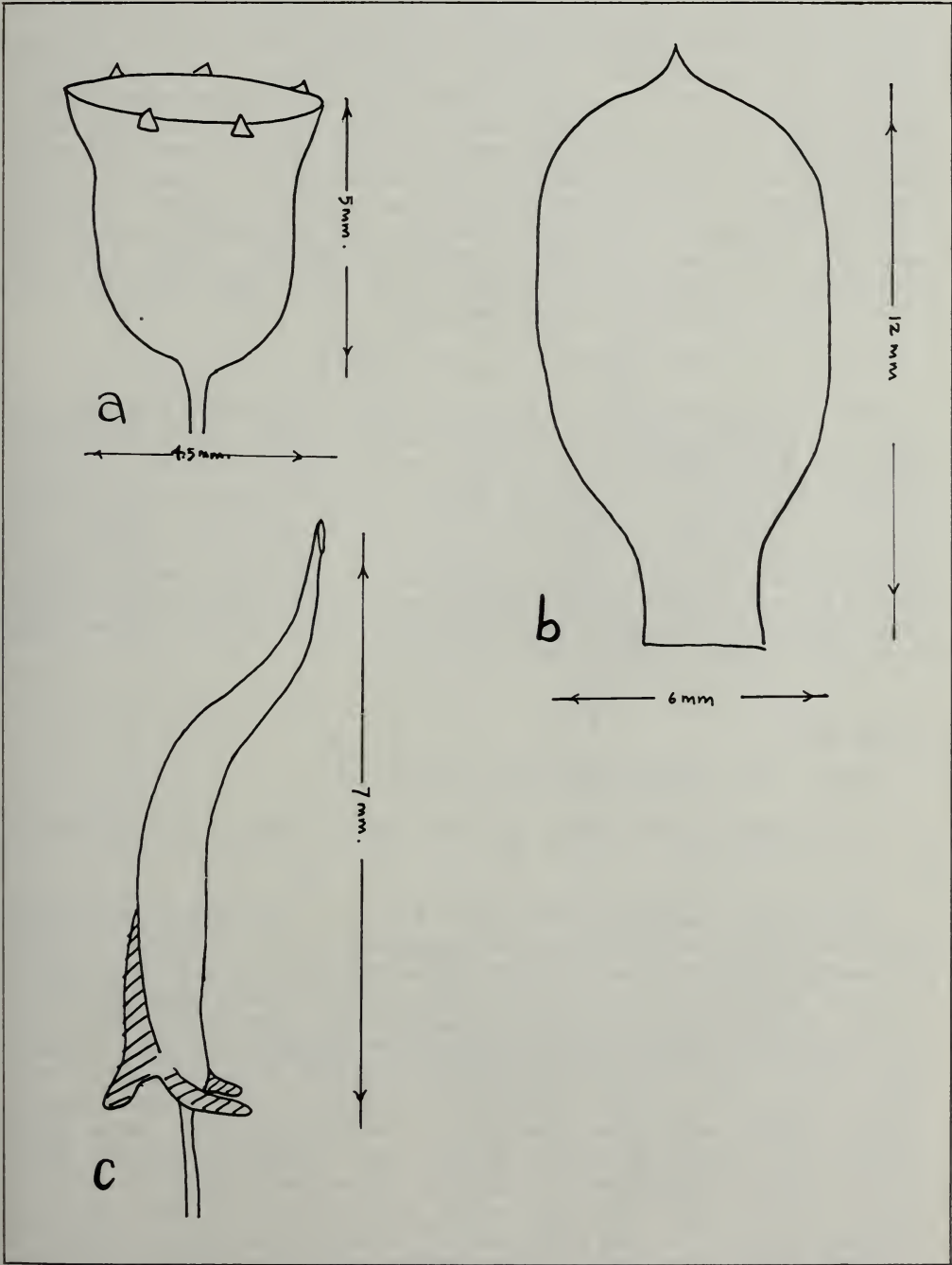


Figure 5. *Medinilla curtisii* Hk. f., a-c Kerr 16779 (holotype *M. elliptica* Craib).

lighter green below; petiole flattened and slightly grooved above, 8–18 mm long, c. 3 mm thick; inflorescence cymose; from thicker, leafless branches, 3–4 cm long with 5–10 flowers; axes slightly flattened, glabrous; bracts and bracteoles triangular, up to 0.5 mm long; primary axes usually solitary, 2.0–2.5 cm long, with 1 or 2 nodes; secondary axes usually developed, 1–5 mm long; tertiary axes not developed or up to 3 mm long, pedicels c. 5 mm long; calyx funnelform, smooth and glabrous, 5–6 mm long, c. 5 mm wide, margin truncate with 5 sub-marginal cusps; petals 5, thin, obovate, broadly and asymmetrically rounded with an oblique cusp at the tip, narrowed to a broad claw at the base, 16–18 mm long, 9–11 mm wide, white; stamens 10, equal, filaments flattened, c. 8 mm long, anthers "J" shaped, c. 8 mm long, narrowed to the single pored tip, connective with a keel-like crest, often extended into a spur c. 0.5 mm long, locules each with a thickened, bulbous-oblong basal lobe, 1.0–1.5 mm long; stigma minute, style flexed, c. 19 mm long; fruit campanulate, c. 6 mm diameter, truncate at the apex; seeds numerous, ovate, c. 1 mm long; testa finely reticulate, glossy tan.

Figure 6: a. calyx, b. petal, c. stamen. Plate 2.

This variety differs from var. *laurifolia*, which is found from Sumatra to the Celebes, in having larger leaves and more densely pustulate stems. The inflorescence and flowers, especially the anthers, of the two taxa are the same. *M. laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw. is remotely related to *M. crassifolia* (Reinw. ex Bl.) Bl. (q.v.) which has narrower leaves and smaller flowers. Var. *ferrata* may eventually prove to be the same as *M. laurifolia*, but since the type specimens differ from all collections of *M. laurifolia* that I have seen, I have reduced it to varietal status pending examination of more material of the two taxa. Craib indicated that *M. ferrata* has ferrugineous branches, however the two sheets of the type collection at Kew are entirely glabrous.

THAILAND

Surat — Kao Nawng: Kerr 13253 (type)

7. *Medinilla pendens* Ridl., J. Str. Br. Roy. As. Soc. 61 (1912) 6 and Fl. Mal. Pen. I (1922) 803.

Epiphyte with hanging branches up to 1.5 m long, adventitious roots scattered, younger branches cylindric, glabrous, fleshy, sparsely warty or smooth, 1.5–2.5 mm thick, drying khaki-tan; older branches leafless, more fleshy, with more warts, 3–4 mm thick, epidermis drying brownish; nodes prominent; blades fleshy coriaceous, opposite, on distal parts of the stems, lanceolate-ovate, acute to acuminate at the tip, rounded and generally shallowly (2–3 mm) cordate at the base; midnerve sunken above, slightly raised and tapering below, with 1 pair of thinner (often indistinct) basal nerves which disappear in the upper $\frac{1}{2}$ of the blades; transverse venation invisible; dark, glossy green above, paler and glossy green below; drying brownish, often with an olive-green hue and with a roughened, reticulate texture on both surfaces; axils glabrous; in general appearance recalling the leaves of *Hoya*; 6–10 mm long, 2–3 cm wide; petiole fleshy, glabrous, 4–7 mm long, 1.5–2 mm thick, drying with a very rugose texture; inflorescence cymose, less frequently of solitary flowers; from leafy or upper leafless nodes, 1.5–3 cm long, spreading, glabrous, with about 6–10 flowers; axes cylindric, dull crimson; bracts and bracteoles lanceolate, acute, glabrous, c. 1 mm long; primary axes solitary, 4–8 mm long, with 1 or 2 nodes (upper internode c. 1 mm long); secondary axes not developed or up to 4 mm long; pedicels 2–3 mm long; calyx urceolate, c. 4 mm long, margin undulate with 5 small teeth; petals oblong, spathulate, obtuse at the

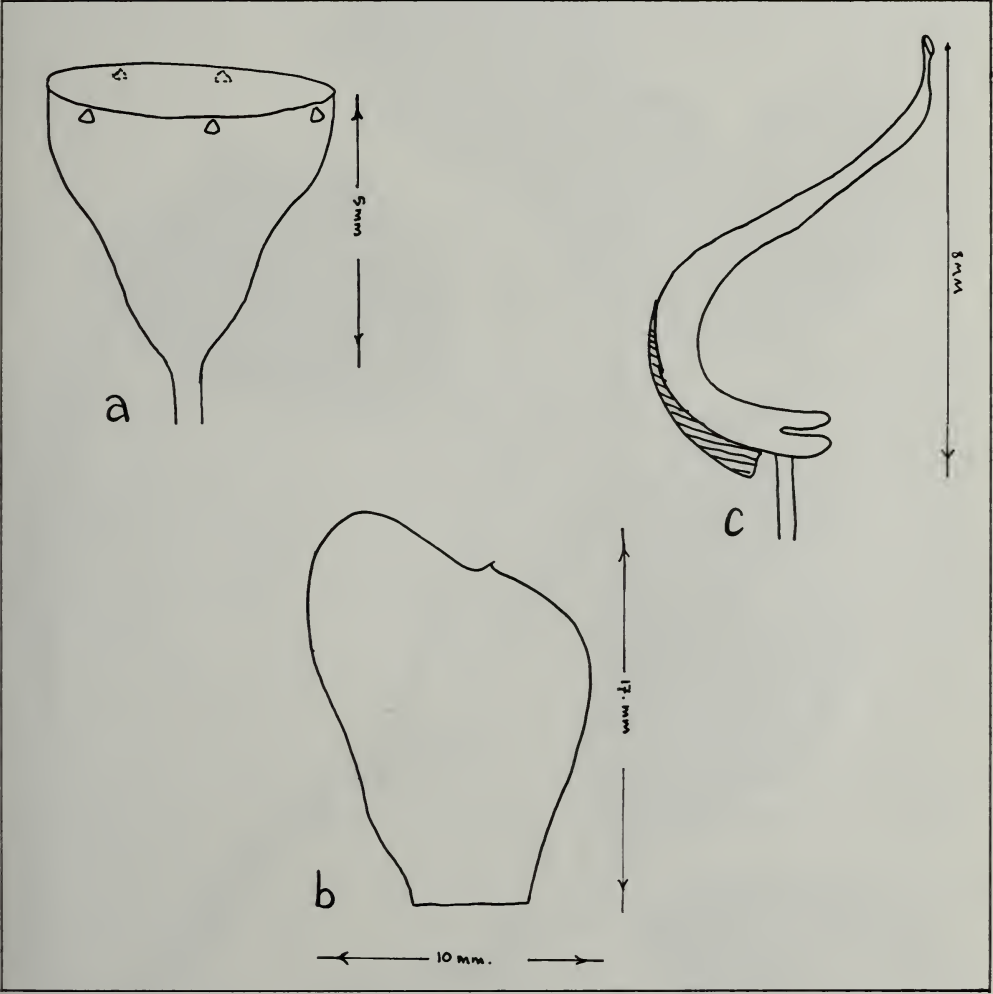


Figure 6. *Medinilla laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw.,
a-c Kerr 13253 (holotype).



Plate 2. Type collection of *Medinilla laurifolia* (Bl.) Bl. var. *ferrata* (Craib) Maxw. Kerr 13253, Kao Nawng, Surat; c. 800m; August 10th 1927; epiphytic shrub, flowers white, evergreen forest.
Photo: Rijksherbarium, Leiden.

tip, c. 6.5 mm long, 3.5 mm wide, thin with visible venation, waxy white; stamens 8, glabrous; filaments slender, c. 3.5 mm long; anthers straight, c. 3 mm long, violet, connective with a short appendage near the base, locules each with a short, curved claw at the base; style short and slender; fruit elliptic to sub-globose, 7–9 mm long, 6–7 mm wide, areolus slightly (c. 0.5 mm) raised, c. 2.5 mm wide; exocarp thin, bright rose-red when ripe; seeds numerous, obovate (ovate), hilum flattened with a thick marginal ring, c. 1.5 mm long; testa finely reticulate, light brown.

Figure 7: a. calyx, b. petal, c. stamen, d. infructescence, e. seed.

From the habit and vegetative features, this species appears to be quite distinct. The fruit and seeds resemble those of *M. clarkei* King (q.v.) and *M. clarkei* King var. *crassiramea* (Hend.) Maxw. (q.v.), however both of these taxa differ greatly in other features, e.g. whorled leaves, pustulate stems, etc.

Ridley notes that *M. pendens* is close to *M. hasseltii* Bl. (now = *M. crassifolia* (Reinw. ex Bl.) Bl., q.v.) and at least with the fruit and seeds this is true. The structure of the inflorescence of *M. crassifolia* is essentially the same, however it is larger. There are also numerous vegetative differences, e.g. leaf shape and size, and 5-merous flowers. *M. pendens* is poorly known and I have included it in this paper since it appears to be a distinct species. It is only known from Kota Tinggi District, Johore. Ridley, s.n., the holotype of *M. pendens* at Kew consists of a few leaves and loose flowers, without any stems or inflorescences. The specimen, in general appearance, resembles *M. succulenta* Bl. (q.v.), however with incomplete and insufficient material of *M. pendens* I cannot comment further on the matter.

MALAYSIA

Johore

Kota Tinggi: Ridley s.n. Panti River, 15 Jan. 1910, *holotype* K; Corner s.n. S. Sedili, 3 miles north of Mawai; Sinclair 40352, 16th mile Kota Tinggi–Jemalmang Road.

8. *Medinilla penduliflora* Ridl., J. Fed. Mal. St. Mus. 4 (1911) 19, and Fl. Mal. Pen. I (1922) 804.

Epiphytic shrub up to 6 m tall; branches square, sharply 4-angled, glabrous, smooth, 2.5 mm thick, nodes slightly thicker; older branches similar, up to 7 mm thick, epidermis drying tan to brownish; blades opposite, coriaceous, glabrous, lanceolate-elliptic to ovate, acute at the tip; rounded and appearing sessile at the shallowly (1–2 mm) cordate base; midnerve with one pair of thinner nerves from near the base (3-plinerved); slightly raised above, prominently elevated below; intra-marginal nerve very faint, 1–2 mm from the margin; transverse venation faint above, not visible below; 9.5–17 cm long, 5–8.5 cm wide; drying dull tan-brown above, deep chocolate brown below, slightly roughened on both surfaces; petiole 2–3 mm long, 3–4 mm thick, glabrous; inflorescence a loose pendulous panicle of cymes from leafy axils (10) 16–32 cm long, glabrous; bracts and bracteoles lanceolate, acute, 0.5–0.75 mm long; axes 4-angled, red-brown; primary axes 1 from each node, 15–30 cm long, 1 mm thick at the base, with 2–3 nodes; secondary axes 3–6 per node, 1.5–3.5 cm long; 3d axes with 1 or 2 nodes, 0.5–1 cm long; 4th axes not developed or up to 2 mm long, each with 1 pedicel c. 2 mm long; calyx campanulate-urceolate, truncate, rim with 5 triangular thickenings below the margin, with 10 faint ribs, 5 mm high, 5 mm wide at the rim, many

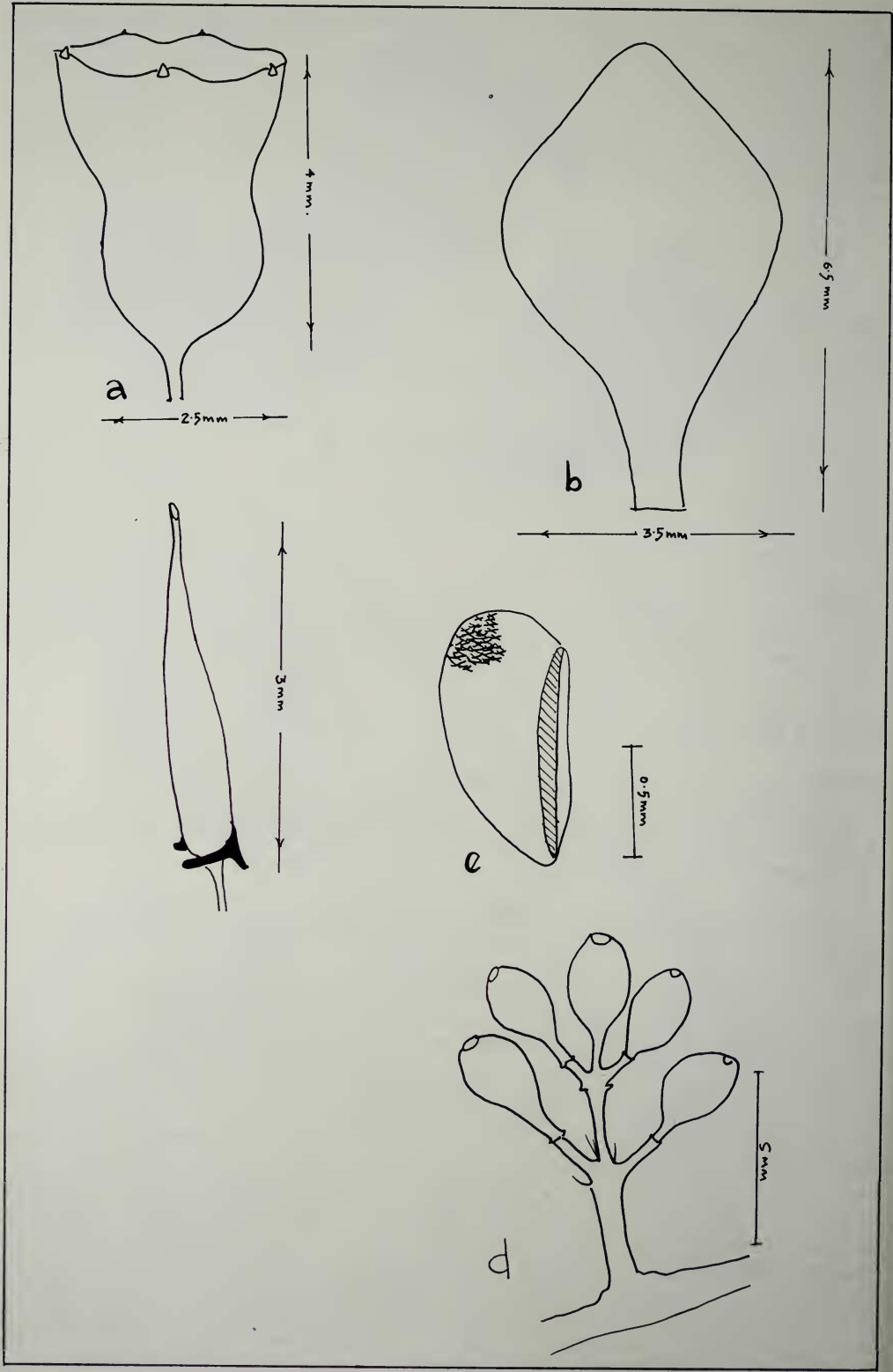


Figure 7. *Medinilla pendens* Ridl., a-c Ridley sn, Panti River, Johore (holotype); d & e Corner sn, Sungei Sedili, Johore.

or red; petals 5, thin, broadly obovate, rounded with a minute cusp at the tip, clawed at the base, venation distinct, 8 mm long, 8 mm across at the widest point, reflexed at maturity, white; stamens 10, uniform; filaments flattened, c. 3.5 mm long; anthers curved, connective with a thin crest without any projection at the base, locules each with a rounded appendage; c. 6 mm long, golden-yellow; fruiting axes slightly thickened, pendent, red; fruit urceolate to sub-globose, glabrous, 7–8 mm long, 6–7 mm wide, areolus c. 0.5 mm high, c. 5 mm wide; exocarp membranous, pink turning purple, drying pinkish or black, sweet and juicy; seeds numerous, ovoid, c. 1.0 mm long, hilum flattened, testa minutely reticulate.

Figure 8: a. calyx, b. petals, c. stamen.

Distribution: lower peninsular Thailand to central Malaysia, above 1000 meters elevation.

The subsessile, 3-plinerved leaves; truncate calyx with 5 thickened points, and the winged connective of this species resembles those of *M. venusta* King (q.v.) which differs in having cylindric and pustulate stems, a shorter (3–5 cm) inflorescence, and asymmetric petals.

The thick, smooth, quadrangular stems; and large inflorescence resemble *M. javanensis* (Bl.) Bl., but that species has thinner blades with prominent secondary venation, and anthers with a linear spur. c. 0.75 mm long on the connective. *M. javanensis* is found in Sumatra and Java.

M. robusticaulis Bakh. f. is also a closely related species which is only known from the type collection (Lorhing 6880) from Sumatra. The branches, leaves, and inflorescence of this species are similar to *M. penduliflora*, but the mature anthers differ by having little or no keel on the crest, but with a linear spur at the base of the connective. The petals are also narrower and larger. The blades of *M. robusticaulis* dry greenish, in contrast to the brownish colour of *M. penduliflora*, below. More material of both species is required to better understand this relationship. If the two species are the same, then *M. penduliflora* has priority.

THAILAND

Krabi — Panom Pencha: Keer 18728.

Nakorn Sitammarat — Kao Luang: Kerr 15498, Hennipman 3870, van Beusekom & Phengkhilai 987.

Surat — Kao Luang: Kerr 13262.

MALAYSIA

Pahang — Brinchang, Cameron Highlands: Symington 21018; Gunong Berumbum: Ridley 13688 (*type*); Taman Sedia, Cameron Highlands: H.M. Burkill 2840; Cameron Highlands: Batten-Pooll sn, Henderson 23621.

9. *Medinilla radicans* (Bl.) Bl., Flora 14 (1831) 509; Cogniaux in DC. Monogr. Phanero. 7 (1891) 573; Bakh. f., Rec. Trav. Bot. Neerl. 40 (1943–45) 160. *Melastoma radicans* Bl., Bijdr. Fl. Ned. Ind. (1826) 1069. *Medinilla radicans* (Bl.) Bl. var. *quadrifolia* (Bl.) Bakh. f. l.c. 161; *Medinilla quadrifolia* (Bl.) Bl. Furtado, Gard. Bull. Sing. 20 (1963) 118; *Medinilla crassinervia* Bl. *sensu* King not Bl., J. As. Soc. Beng. 69, II:1 (1900) 64 and Ridley, Fl. Mal. Pen. I (1922) 804; *Medinilla pterocaula* Bl. *sensu* Furtado l.c. 118.

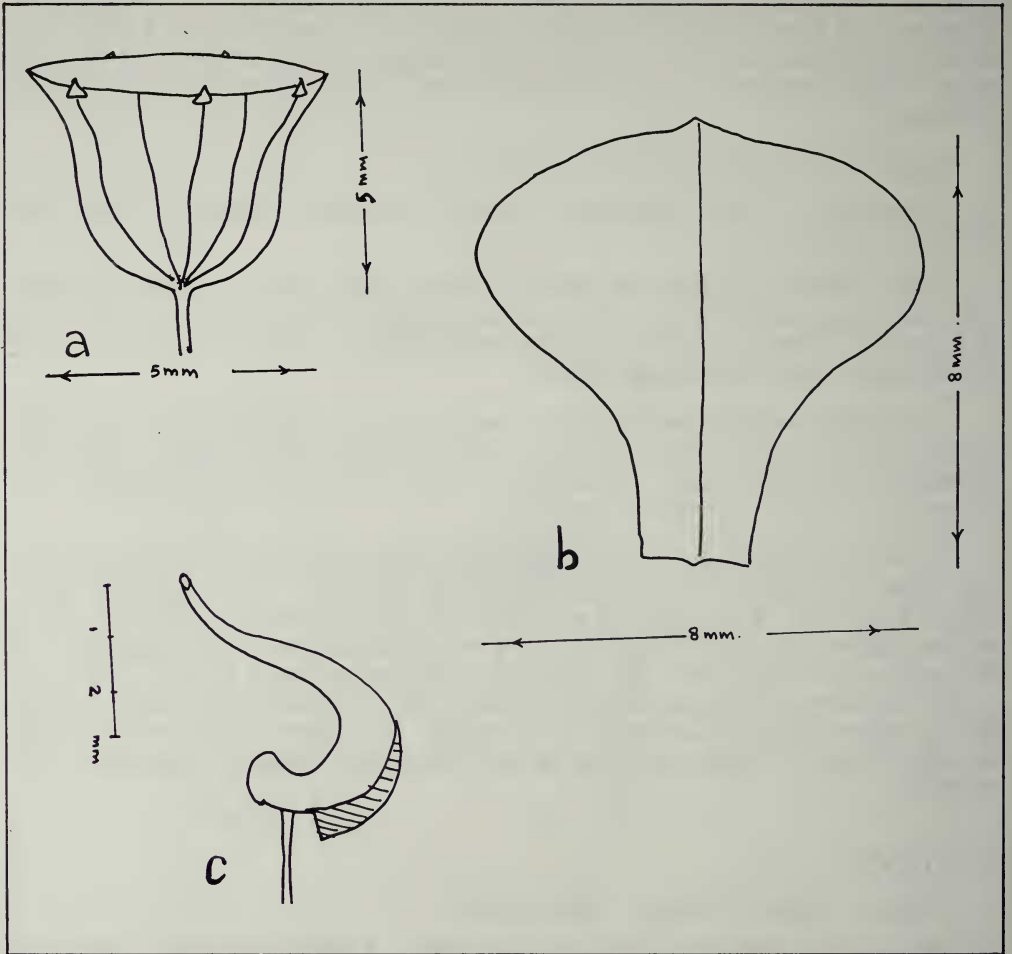


Figure 8. *Medinilla penduliflora* Ridl., a-c H. M. Burkill 2840.

Shrub, 2–3 m tall, often creeping; branches cylindric, sometimes shallowly 2-grooved, smooth, glabrous, 2–3 mm thick, drying dark brown to blackish; older branches and stems cylindric, frequently with adventitious roots from various parts, often slightly ribbed, drying with a striate to wrinkled texture, khaki-tan to light brown, up to 8 mm thick; nodes thickened; blades sub-coriaceous, in whorls of 4 or 5, glabrous, elliptic to obovate, acute at the tip, acute and decurrent at the base; mid-nerve distinct with or without a pair of side nerves originating from above the base (3-plinerved), sunken above, raised and tapering below; intra-marginal nerve, when present, c. 1 mm from the margin; transverse venation obscure to invisible; 7–16 cm long, 3–6.5 cm wide; drying tan-brown with a greenish hue and with a roughened texture above, brown to greenish and smoother below; petiole somewhat flattened or almost cylindric, 1.5–3 cm long, 1.5 mm thick; inflorescence umbelliform, from leafless nodes, few (c. 6–8) flowered; axes cylindric, smooth, glabrous; brown-reddish; primary axes 1 or 2 from each axil, 9–14 mm long, c. 1 mm thick, tip enlarged with clustered (radially arranged with one centrally located) pedicels 4–5 mm long; calyx cyathiform, truncate, glabrous, 8 mm long, 4 mm wide, drying tan with a roughened texture; petals 4, thickened, in bud oblong, rounded at the tip, truncate at the base, 8 mm long, 6 mm wide; stamens 8, 4 long and 4 shorter; bud filaments flattened, longer ones 7–8 mm long, shorter 4–5 mm; anthers all similar in shape, but differing in size, cylindric, curved, tapered at the tip, longer ones 8–9 mm long, shorter 5–6 mm; connective at the base with a thickened, spatulate, grooved appendage c. 2 mm long; locules each with a thickened, oblong spur c. 1.5 mm long; stigma minute, style slender c. 6 mm long; fruiting axes slightly thicker; fruit urceolate, body 9–11 mm long, 8–10 mm wide; areolus 3–4 mm high, 4 mm wide, with a distinct annular disc inside; pink turning red when ripe, drying brownish with a roughened texture, pericarp c. 1 mm thick, gritty; seeds numerous, ovoid, smooth, testa without ornamentation, tan, c. 1 mm long.

Figure 9: a. calyx and corolla bud, b. petal, c. long stamen, d. short stamen.

Distribution: Malay Peninsula and the Malay Islands.

The whorled leaves and axillary, umbellate inflorescences distinguish this species. Allied to *M. radicans* is *M. pterocaula* Bl. which has winged branches, 3–5–7 nerved blades, and 5-merous flowers. *M. crassinervia* Bl. is also related but has few flowered cymes or solitary flowers, a lobed calyx, and 5–6 petals. *M. varingiaefolia* (Bl.) Nayar (q.v.) although it differs in other respects, also has has dimorphic stamens.

Bakh. f. has, with justification, reduced *M. quadrifolia* Bl. to a variety of *M. radicans* (Bl.) Bl. Furtado, solely on the basis of the literature and the limited number of specimens of both taxa in the Singapore collection, reduced *M. quadrifolia* Bl. to a synonym of *M. radicans*. Among these specimens only one (Strugnell 13007) is not in fruit and it only has buds. Therefore, I have not seen mature flowers of this species. Furtado is correct in his observation that uninerved (*M. radicans*) and 3-nerved blades (*M. quadrifolia*) are found on the same specimen (Ridley 8618, Burkill & Holttum 7866, Henderson & Nur 11101, and Shah 2800), while others are entirely 3-nerved (Goodenough 1637, Ridley s.n. from Semangkok, Selangor in Aug. 1905; and Strugnell 13006), or all uninerved (Strugnell 13007, 27890). Cogniaux and Bakh. f. in their descriptions of these taxa include several other differences, viz. *M. radicans* has smaller flower parts and ivory-white petals, while var. *quadrifolia* has larger flowers and red petals. Bakh. f. notes that the different venation of var. *quadrifolia* is the major distinction between these two

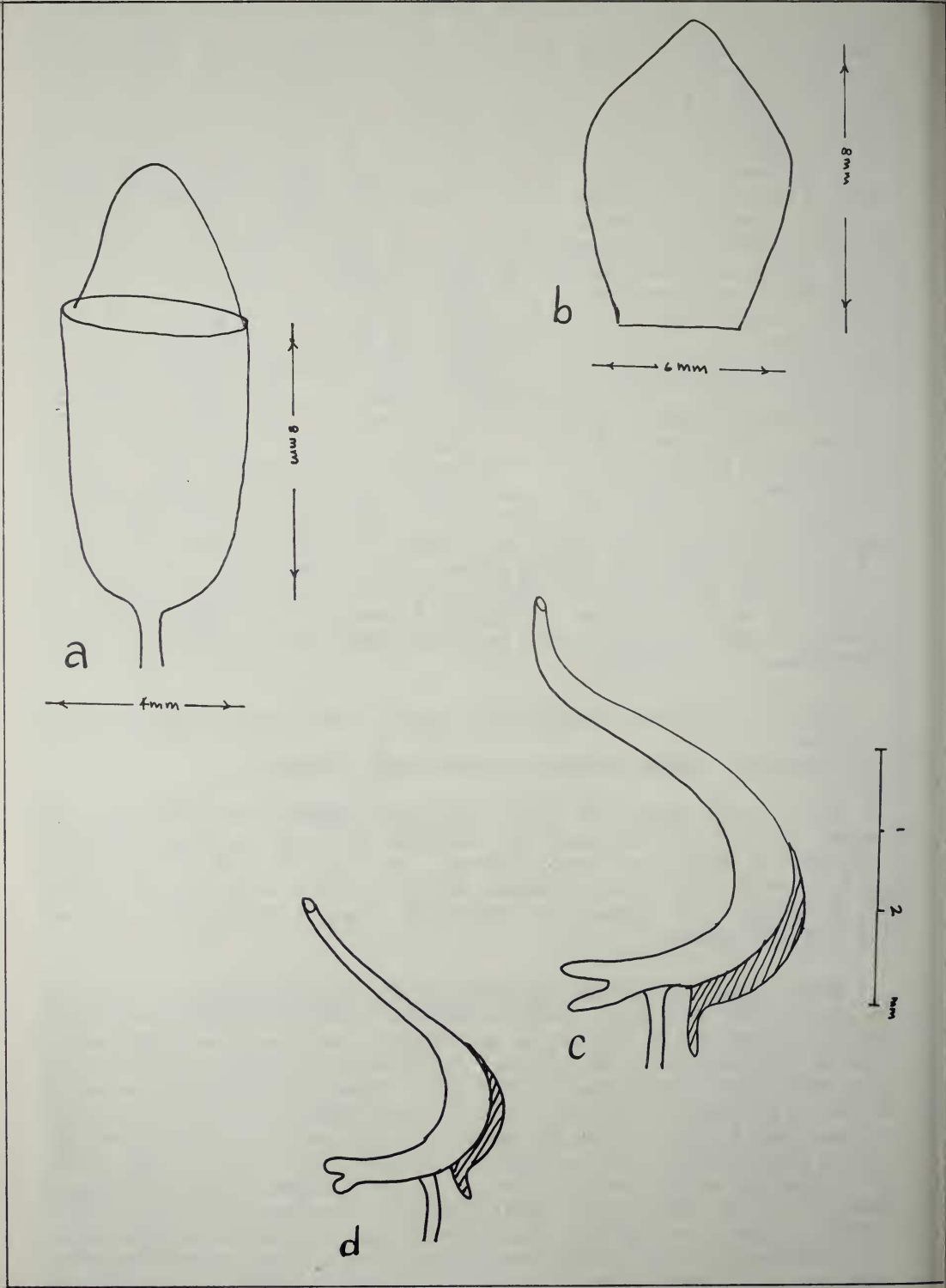


Figure 9. *Medinilla radicans* (Bl.) Bl., a-d Strugnell 13007.

taxa. In this respect, plus the fact that the venation is mixed on several sheets, I agree with Furtado that *M. quadrifolia* is the same as *M. radicans*. Examination of mature flowers of both taxa will probably confirm this reduction.

Bakh. f. doubts that the distribution of both taxa is beyond the Malay Islands. Finally, most of the specimens of *M. radicans* that I have studied were originally determined as *M. crassinervia* Bl.

Furtado, again on the basis of the literature and a few specimens in the Singapore collection, annotated several specimens which were originally identified as *M. crassinervia* Bl. as *M. pterocaula* Bl. (l.c. 118). According to Cogniaux (l.c. 575) and Bakh. f. (l.c. 156) *M. pterocaula* Bl. has quadrangular branches generally with 8 wings, 3–5–7 plinerved blades, a truncate calyx, 5 white petals, and lacks an annular disc inside the areolus. All of the specimens that Furtado annotated as *M. pterocaula* have branches that are either strongly ribbed or shortly winged. Some of the ribbed branches compare very closely with some of the branches of *M. radicans*, however none of the latter are winged. The leaves of all the specimens considered by Furtado as *M. pterocaula* have 3-nerved blades which are identical to those of *M. radicans*.

The inflorescence is also the same as in *M. radicans*, except that Wray 1821 has short (4 mm) secondary axes. The fruit in these specimens has a shorter areolus, but there is a distinct annular disc inside. A specimen collected by Ridley (s.n. Batang Padang River, Perak in Dec. 1908), which Furtado annotated as *M. pterocaula*, has 4 loose stamens with curved anthers and appendages very similar to those of Strugnell 13007 which he labelled as *M. radicans*.

The specimens from the Malay Islands which Furtado annotated as *M. pterocaula* also do not differ significantly from those of *M. radicans* collected in the Malay Peninsula. Blume's long description and the excellent illustration by Rumphius in Rumphia I (1835) page 12 and plate 1 of *M. pterocaula* show the species as having multi (8) winged-undulate branches which become merely ribbed below. In Ridley's specimen (s.n.) from Batang Padang River, Perak (Dec. 1908) and less so with Wray 1821, the branches are winged but not undulate. Unfortunately, both of these collections are in fruit, thus I do not know what the flowers look like.

The other specimens which Furtado (l.c. 118) listed as *M. pterocaula* have slightly ribbed or nearly smooth branches. The illustration in Rumphia of the calyx, petals, and stamens of *M. pterocaula* compare closely with these specimens. From these specimens annotated as *M. pterocaula* that I have studied there is variation in the nature of the branches — from undulate-winged to nearly smooth. The other vegetative features, inflorescence and flower structures, and fruit appear to be the same. In fact, aside from the branches, it is difficult to distinguish these two species. From a comparison of the plates of *M. pterocaula* and *M. radicans* (plate 3) in Rumphia with the specimens at hand I cannot be certain that the two species are actually distinct since structurally they are nearly identical. With only one specimen of *M. radicans* that has flowers which can be examined (Strugnell 13007, buds) I am uncertain as to what variation in flower structure this species has. The mixed uninerve and 3-nerved blades is one variation which has been resolved, but the differences in the stems and perhaps the dimorphic anthers requires further study. There is the possibility that one complex involving a single taxon is involved here, however nothing can be confirmed until I am able to examine more relevant material.

Therefore, since *M. radicans* is rather well represented in the Singapore collection, plus the fact that the specimens of *M. pterocaula* appear to be only slightly different; I have, for the moment, included the latter under the former.

I have not seen any specimens in the Singapore collection that could possibly be considered as being *M. crassinervia* Bl. which has pustulate stems and a lobed (capped) calyx. The anthers appear similar to those of *M. pterocaula*.

The specimens of *M. radicans* (Bl.) Bl. at Leiden all have uninerved blades which are very distinct from the 3-nerved ones of var. *quadrifolia* (Bl.) Bakh. f. *M. radicans* (*sensu stricto*) is found from Java to the Lesser Sunda Islands, while var. *quadrifolia* has a distribution from Sumatra to New Guinea. Apparently there is hybridization in central Malaysia where both uninerved and 3-nerved blades are not constant features. Maingay 799 and Wray 1821 (from Malacca and Perak, respectively) are both 3-nerved.

Perak — Waterfall: Wray 1821.

Selangor — Gading For. Res.; Chelliah 98231; 23rd mile Ginting Simpah:

Strugnell 13006, 13007; Gunong Simpah: Strugnell 27890.

Pahang — Fraser's Hill: I. H. Burkill & Holttum 7866, Henderson & Nur 11101, Shah 2800; 15th mile Pahang Track: Ridley 8618; Keng & Hons.

Stud. 94.

Selangor — Semangkok: Ridley sn in Aug. 1905.

Malacca — Sine loc.: Maingay 799 (1689).

Singapore — Goodenough 1637.

10. *Medinilla rubicunda* (Jack) Bl., Flora 14 (1831) 512, Clarke in Fl. Brit. Ind. II (1879) 547, Cogniaux in DC. Mono. Phan. 7 (1891) 583; *Melastoma rubicunda* Jack, Trans. Linn. Soc. 14 (1825) 18.

Wallich cat. 4086, from Penang, is the only specimen of this species that I have seen from the Malay Peninsula. This collection, probably the oldest in existence since Jack's original specimens were destroyed, consists of budding material. Cogniaux (l.c. 583) cites several collections (Griffith 2284, J.D. Hooker from Sikkim, Hk. f. & Thomson from Khasia) of this species which I have examined at Leiden having mature flowers and fruit. In comparing these collections with specimens of *M. succulenta* (Bl.) Bl. (q.v.) it is obvious that the two taxa are very close, but there are several features which can be used to distinguish them. A basic problem is the fact that flowers of *M. succulenta* are sparse, thus I have only examined two flowering collections (Kerr 7773, and Holttum 24970) of it.

M. rubicunda has distinct petioles usually more than 3 mm long in contrast to *M. succulenta* where they are from 1–3 mm long. While the inflorescences of the two species appear to be the same, the flowers of *M. rubicunda* are larger. The calyx is c. 5 mm long, 4 mm wide; and the petals are 12–14 mm long and c. 6 mm wide. The branchlets of *M. rubicunda* are cylindric and smooth, while those of *M. succulenta* are frequently 4-angled and with some pustules. Finally, the fruit of *M. rubicunda* is distinctly urceolate, while those of *M. succulenta* appear to be globose.

Both species require a detailed study in order to properly understand their exact relationship. From the limited and incomplete material available I can merely suggest that the two taxa are very related and that *M. rubicunda*, if it still occurs in the Malay Peninsula, is rare and grows in the most western range of its distribution.

Clarke (l.c. 548) was of the opinion that *M. rubicunda* is very close to *M. hasseltii* Bl. (= *M. crassifolia* (Reinw. ex Bl.) Bl. (q.v.)) which differs in having thinner pustulate branches, thicker leaves, and 4 or 5 merous flowers.

Figure 10: a. calyx, b. petal, c. stamen. Plate 3.

11. *Medinilla scortechinii* King, J. As. Soc. Beng. 69, 11: 1 (1900) 62; *M. hasseltii* Bl. var. *griffithii* Cl. in Fl. Brit. Ind. II (1879) 547 syn. nov.

Epiphytic shrub, 1–3 m tall, often spreading, frequently on rocks and trees; or a climber; branches cylindric, glabrous, usually smooth when young, 2.5 mm thick; older stems sparsely pustulate-tuberculate and up to 3.5 cm thick; epidermis dark brown to blackish and striate-ridged when dry; blades fleshy, coriaceous, opposite, glabrous; broadly lanceolate, elliptic, or ovate; acuminate at the tip (acumen 1–2 cm long), broadly rounded and shallowly (2–5 mm) auriculate-cordate at the base; mid-nerve with a very faint and incomplete intramarginal nerve from the base and one prominent pair of veins arising from near the base; 3 main nerves sunken above, raised and tapering to the tip; transverse venation pinnate from each of the 3 main nerves, c. 20–30 pair, very obscure to invisible on both surfaces; 11–23 cm long, 5.5–11 cm wide, dark green tinted with crimson; drying with a roughened texture, brown with a yellowish or olive hue above, brown below; petiole flattened, 2–4 mm long 3–5 mm wide, glabrous; inflorescence a lax panicle of cymes, 6–12 cm long, glabrous, multiflowered, from leafy or leafless nodes; axes flattened, often winged, orange-red; bracts and bracteoles lanceolate-ovate, acute, 1–4 mm long; primary axes 1–3 per axil, 1–6 cm long with 1–3 (infrequently more) nodes, 2–4 mm wide; secondary axes 2–5, whorled, 1.5–3 cm long 3d axes 1–2 cm long, 4th axes not developed or up to 5 mm long; pedicels solitary on the tip of each ultimate axis, c. 3 mm long; calyx campanulate, glabrous, lobes 4, broadly triangular, c. 0.5 mm long with a sub-apical cusp, lobes less distinct in mature flowers; c. 3 mm high, 2 mm wide, faintly 8 ribbed in bud, obscure with maturity; bright coral, orange-red; petals 4, thin, oblong, often asymmetric, rounded with a thickened mucro at the tip, clawed at the base, 6–8 mm long, c. 4 mm wide, reflexed at maturity; pink, orange-red; stamens 8, filaments flattened, 4–5 mm long; anthers cylindric, curved, narrowed at the tip, 3–4 mm long, yellow, locules each with a linear, brown appendage, connective not crested but with a smaller brown spur-like appendage at the base; fruiting axes thickened and slightly longer; fruit globose, 6–8 mm diameter, areolus 4–5 wide exocarp thin, smooth, orange-red, blue-black, to purple when ripe; seeds numerous, ovoid; c. 1 mm long, finely and minutely reticulate.

Figure 11: a. calyx and corolla bud, b. petals, c. stamen. Plate 4.

Habitat: primary evergreen forests up to 1600 m elevation, noted on limestone.
Distribution: central Malaysia.

This species is very close to *M. venusta* King (q.v.) which has more densely pustulate-tuberculate branches and stems, truncate calyx, smaller and white petals, different anthers, blades with acute bases (sometimes slightly cordate), and longer petioles. The relatively large, 3-plinerved leaves; large, complex, showy inflorescences, and asymmetric petals distinguish these two species from all others in the Malay Peninsula.

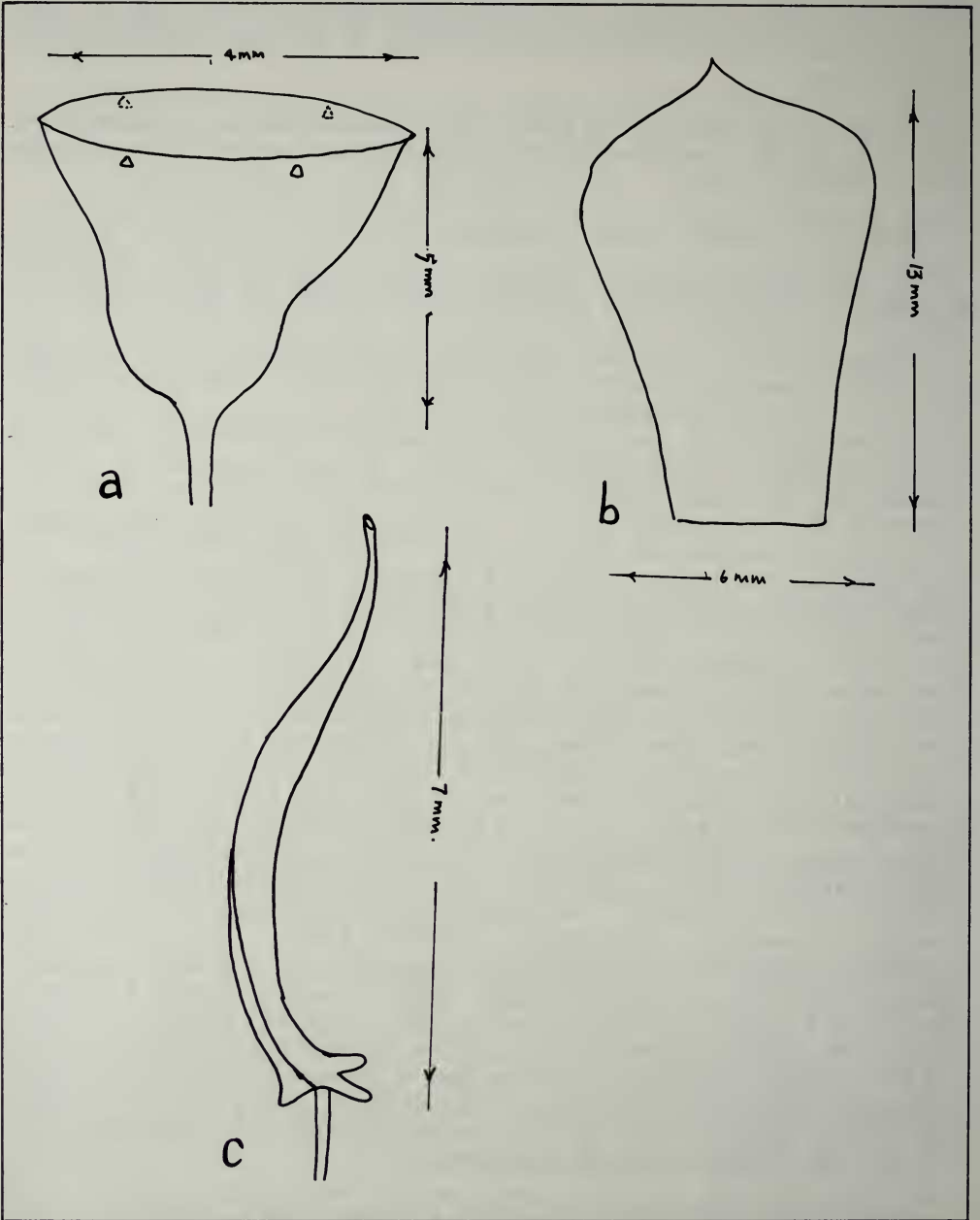


Figure 10. *Medinilla rubicunda* (Jack) Bl., J. D. Hooker & Thomson sn, Khasia.



Plate 3. Wallich catalogue 4086, the type collection of *Medinilla rubicunda* (Jack) Bl., collected on Penang in 1932.
Photo: Rijksherbarium, Leiden.

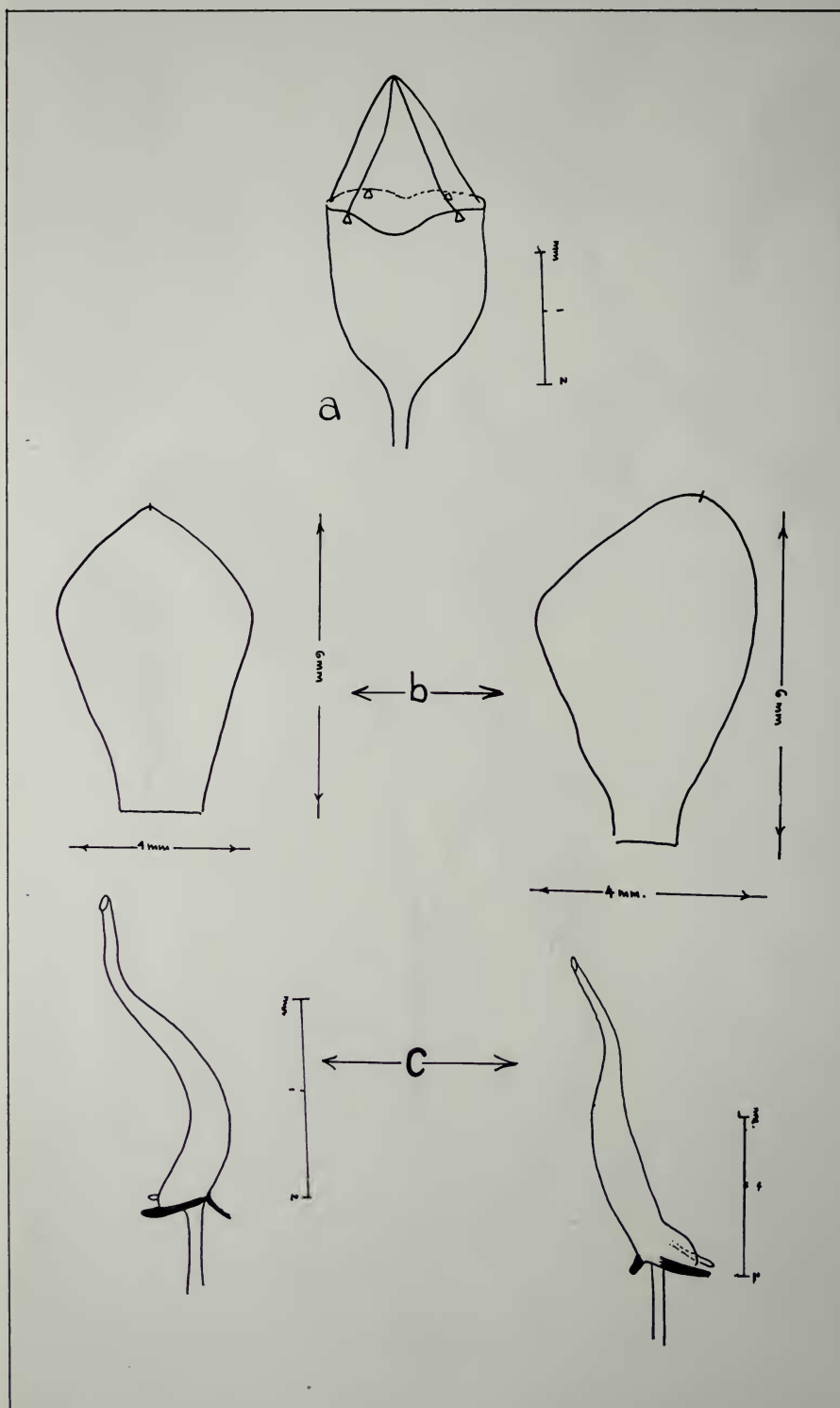


Figure 11. *Medinilla scortechinii* King, a-c Wray 1739 (syntype).



Plate 4. *Medinilla scortechinii* King. The bright red inflorescence, small flowers, and white petals distinguish this species.
Photo: Dr. Ivan Polunin on Gunong Ulu Kali, Genting Highlands, Selangor in Dec. 1977, c. 1600m.

Another close taxon is *M. crassifolia* (Reinw. ex Bl.) Bl. (q.v.) which has nearly identical anther appendages, but differs in having a truncate calyx, shorter inflorescences with cylindric axes, a crested connective, and distinctly petioled leaves.

King (l.c. 63) indicates that *M. scortechinii* is closest to *M. javanensis* (Bl.) Bl. which has acutely quadrangular branches, minute hairs in the leaf axils, 5–7 nerved blades, and terminal (rarely axillary) inflorescences.

The holotype of *M. hasseltii* Bl. var. *griffithii* Cl. (Griffith 2282; from Mt. Ophir, Malacca) has smaller leaves and a shorter inflorescence than many specimens of *M. scortechinii*, but with other specimens the comparisons are identical. Ridley incorrectly reduced var. *griffithii* to a synonymy of *M. hasseltii* Bl. (= *M. crassifolia* (Reinw. ex Bl.) Bl., q.v.).

Perak — Bujong Malacca: Ridley sn in Sept. 1898; Gunong Batu Puteh: Wray 391 (*syntype*); Hermitage: Curtis 1297 (*syntype*); Larut: King's collector 4188 (*syntype*); Maxwell's Hill: Curtis sn in Oct. 1900, Wray 1739 (*syntype*); Thaping Hills: Anderson sn on 13 March 1914, Derry sn in 1899; sine loc.: King's collector 307 (3677?) (*syntype*), Scortechini 622 (*syntype*).

Kelantan — Gua Hiuk: Henderson sn; Gua Musang: Stone 7522; Gunong Brong, Ulu Kelantan: Shah & Ali 2897.

Trengganu — Gunong Mandi Angin: Whitmore 12149; Ulu Brang: Moysey & Kiah 33829.

Selangor — Bukit Etam: Kelsall sn in Jan. 1891; Bukit Hitam: Ridley 7327;

Genting Highlands: Shah & Ali 2978, Maxwell 78-89a, Stone 11660.

Pahang — Boh Plantations, Cameron Highlands: Nur 32563; Fraser's Hill.

Addison 37383, H.M. Burkill 2034, Kalong 22372, Purseglove 4103, Soepadmo & Mahmud 9051; Stone 6266, 8663, 10780; Whitmore 8636; Gunong Benom Game Res., Ulu Krau: Ismail 97819; Gunong Tahan: Holtum 20608; Gunong Tapis: Chan 19900; Lubok Tamang: Henderson 10950; Penglet, Cameron Highlands: Henderson 23638; Sungei Yet, Fraser's Hill: Henderson & Nur 11135.

Malacca — Mt. Ophir: Griffith 2282 (type *M. hasseltii* Bl. var. *griffithii* Cl.) Keng 7043.

Johore — Lengor For. Res., Mersing: Whitmore 413.

12. *Medinilla selangorensis* Maxw. sp. nov.

Frutex scandens, terrestris vel epiphyticus, rami cylindricus, glabris, pustulatis. Folia opposita verticillatae, axillis glaberrimis, coriacea, anguste ad late elliptica vel subobovata, glabra, 10–22 cm longa, 4–12 cm lata, basi secus petiolum, $\frac{1}{2}$ – $\frac{3}{4}$ plo longitudine decurrentia, apice rotundata, nervis 5, marginalibus tenuibus, petiolo complanato, 1–2.5 cm longo. Inflorescentia paniculata, multiflora, 3.5–15 cm long, parce puberula vel furfuracea, axe primario solitario, complanato. Flores 4 vel 5 meri, calyce 4 vel 5 denticulato, sparse puberulo, 4–5 mm longo; stamina 8 vel 10, equalia, connectivo dorso carinato, loculis basi utisque appendiculata curvata bulbosa instructis vel inappendiculato. Fructe campanulati-globosi, 5–6 mm diametro.

Shrub up to 2 m tall, epiphytic or terrestrial in mossy substrate, branches often climbing; youngest branchlets cylindric, glabrous, with scattered pustules, 4–5 mm thick, epidermis drying tan, main stems up to 2 cm thick, bark c. 1 mm thick, roughly fissured, brown, pith hollow; leaves opposite or in most instances in whorls of 3, axils glabrous; blades coriaceous, glabrous, narrowly to broadly elliptic or somewhat obovate; obtuse or broadly rounded at the tip, narrowed and decurrent ($\frac{1}{2}$ to $\frac{3}{4}$ the length of the petiole) at the base, mid-nerve with 2 pair of nerves from near the base, lowest pair thinner and often disappearing below the tip; 10–22 cm long, 4–12 cm wide, drying dull greenish-brown on both surfaces and with a roughened texture; petiole flattened, 1–2.5 cm long, 4–6 mm wide, glabrous; inflorescence from leafy axils or on older leafless stems, in a loose panicle of cymes, many flowered, 3.5–15 cm long; axes somewhat flattened, red, furfuraceous; bracts and bracteoles lanceolate, acute, c. 1 mm long, furfuraceous; primary axes solitary, 1.5–9 cm long, 1–1.5 mm thick at the base, with 1 or 2 nodes; secondary axes 1–4 cm long with 1–3 nodes, tertiary axes 3–4 mm long pedicels 2–3 mm long; calyx campanulate, maroon, sparsely and minutely puberulous, 4–5 mm long, 4–5 mm wide, margin truncate with 4 or 5 sub-marginal cusps; petals 4 or 5, thin, obovate, broadly rounded (often irregularly so) with a cusp (often obliquely situated) at the tip, narrowed to the truncate base, 6–7 mm long, c. 4 mm wide, white and often tinged with pink; stamens 8 or 10, equal; filaments c. 3.5 mm long; anthers c. 3 mm long, light yellow, curved, with a keel-like connective crest and with or without a bulbous appendage at the base of each locule; stigma capitate; style slender, 4–5 mm long; fruit campanulate-globose, 5–6 mm diameter, light pink to red; seeds several, ovate, hilum flattened, c. 1 mm long; testa minutely reticulate, glossy tan.

Figure 12: a. calyx, b. petal, c. stamen, d. calyx, e. petal, f. stamen; and Plate 5.

Habitat: moist forests, 1600–2000 m elevation.

Distribution: Selangor, Pahang.

In several respects this species resembles *M. clarkei* King (q.v.), viz. cylindric, sparsely pustulate branches, and structure of the inflorescence; but differs in having a generally smaller inflorescence, shortly decurrent to rounded or cordate blades, and different anthers. *M. clarkei* has leaves in whorls of 4 and usually glabrous inflorescences, in contrast to *M. selangorensis* which has leaves in whorls of 3 (sometimes opposite) and furfuraceous axes.

Ridley (Fl. Mal. Pen. I (1922) 804) cites the holotype of *M. selangorensis* under *M. perakensis* King which I consider a synonym of *M. clarkei* (q.v.). *M. selangorensis* is unusual in that it has both opposite and whorled leaves. More collections of this species are needed so that a more detailed understanding of its relationship with other species can be made.

Robinson sn from Gunong Mengkuang, which I have designated as the holotype (Kew), has 4-merous flowers, 8 stamens, and anthers with a curved and bulbous appendage at the base of each locule. Maxwell 78-80 from Gunong Ulu Kali in the Genting Highlands, matches this collection in all respects except that the flowers are 5-merous and there are 10 stamens which have inappendiculate locules.

While variation in the number of stamens (8 or 10) is known in *Medinilla* (e.g. *M. curtisii* Hk. f. and *M. venusta* King), the obvious differences in the anthers of the two specimens is difficult to resolve. Both are identical in all other respects, especially the puberulous calyx, and therefore cannot be confused with any other species of *Medinilla* from the region.

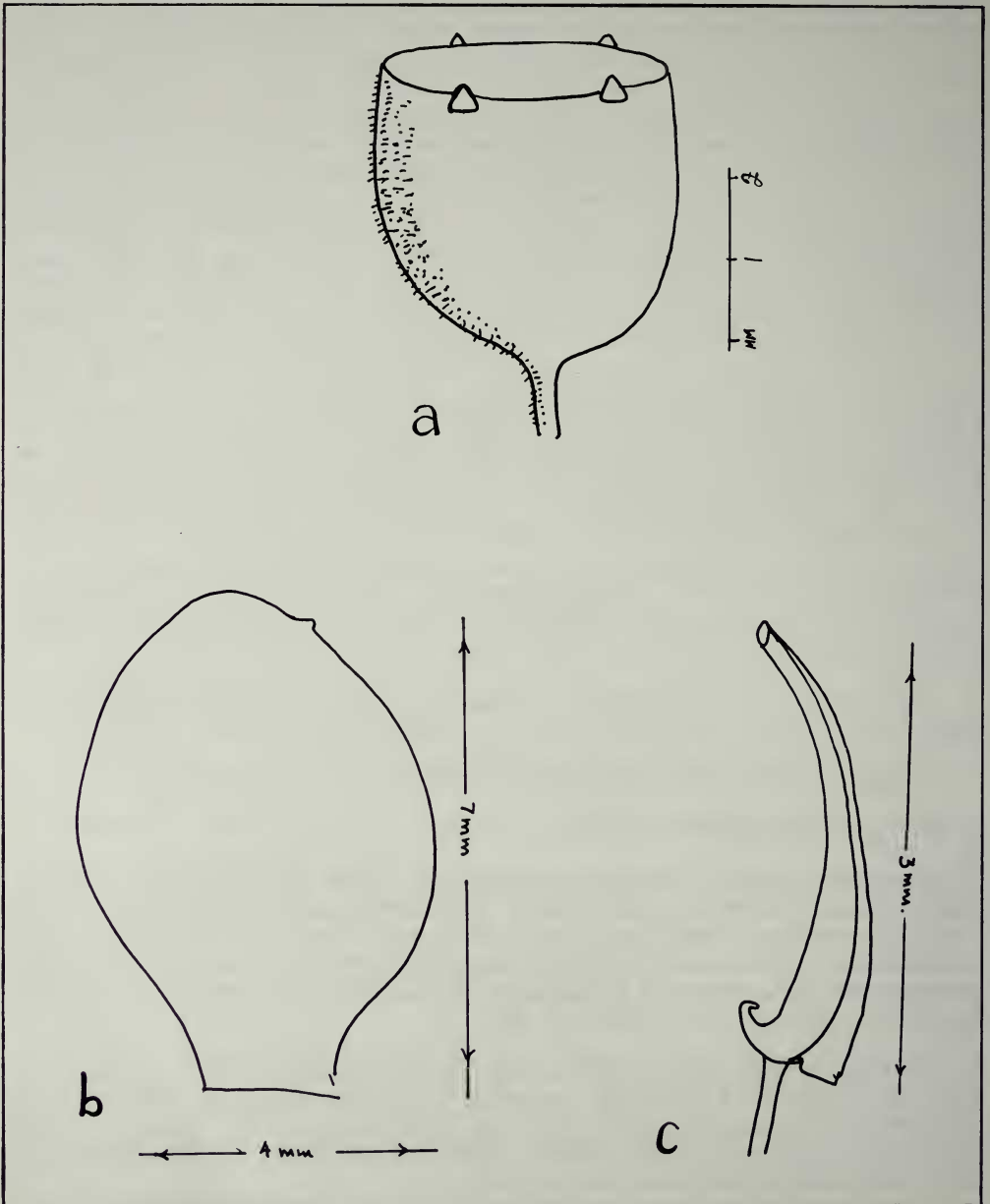


Figure 12. *Medinilla selangorensis* Maxw., a-c Robinson sn, Gunong Mengkuang (holotype).

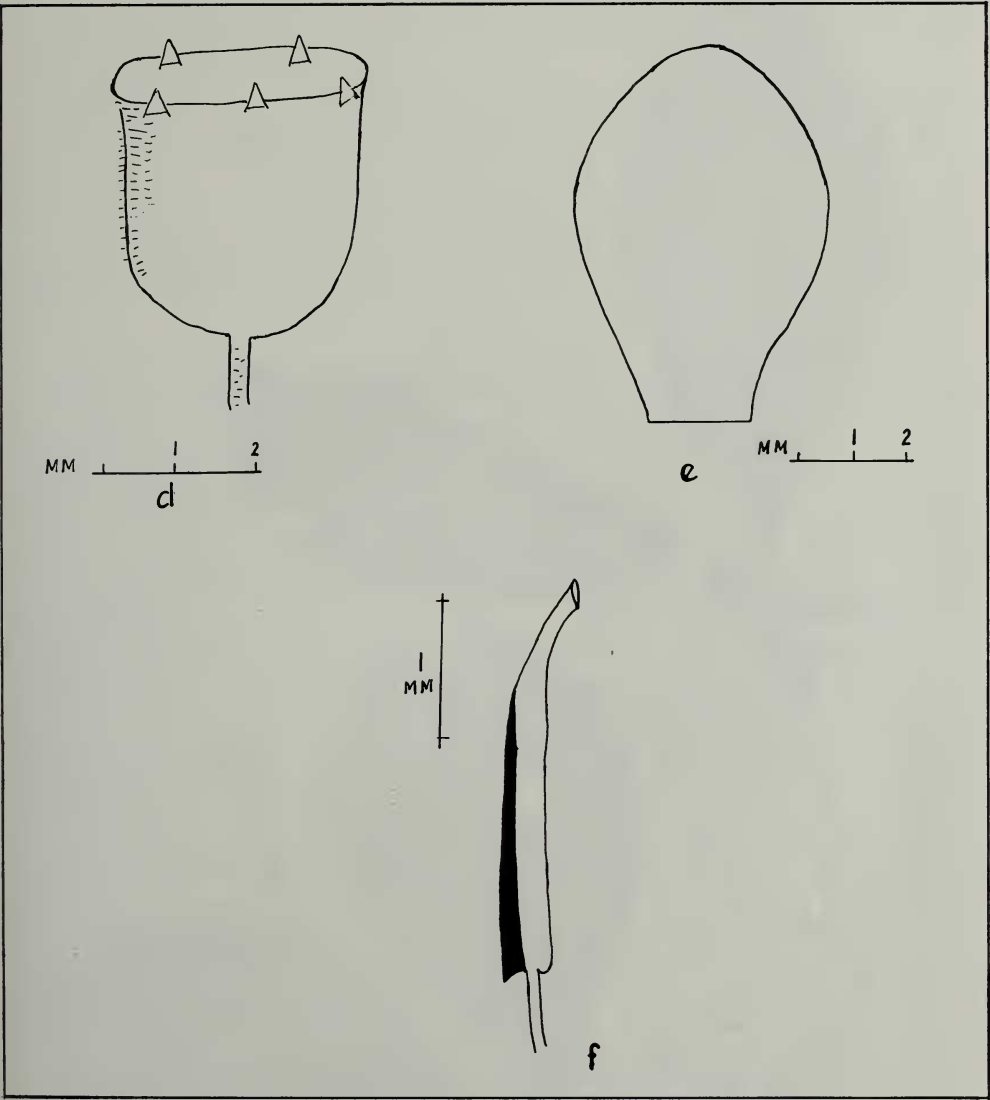


Figure 12. *Medinilla selangorensis* Maxw., d-f Maxwell 78-80.



Plate 5. *Medinilla selangorensis* Maxw., holotype at Kew. Collected by Robinson (sn) from Gunong Mengkuang, Selangor on 2 Feb. 1913. Cited by Ridley under *Medinilla perakensis* King (= *M. clarkei* King). Photo: Rijksherbarium, Leiden.

Allied species include *M. pendula* Merr., from the Philippines which has narrower, whorled leaves, and different anthers; *M. penduliflora* Ridl. (q.v.) which has 4-angled branches, sessile leaves, and 5-merous flowers; and *M. intermedia* Bl. which has bristly leaf axils.

Selangor — Gunong Mengkuang: Robinson sn on 2 Feb. 1913 (holotype Kew); Gunong Ulu Kali: Shah & Ali 2951, Flealey 8, Maxwell 78–80.

Pahang — Gunong Beramban: Maxwell 78–160.

13. *Medinilla speciosa* (Reinw. ex Bl.) Bl., Bijdr. Nat. Wet. 6 (1831) 256. *Melastoma speciosa* Reinw. ex Bl., Cat. Btzig. (1823) *nomen* and Flora 14 (1831) 515.

Shrub up to 3 m tall, epiphytic or terrestrial (frequently growing on rocks), or a woody climber; branches thickly 4-angled to 4-winged, epidermis smooth, glabrous, when dry khaki-tan and 7–10 mm thick, peeling off leaving a cylindric, smooth to sparsely lenticellate, brownish surface; leaves glabrous, in whorls of 3 (rarely opposite or in whorls of 4); blades fleshy, sub-coriaceous, narrowly to broadly elliptic or obovate, acute at the tip; acute and decurrent, frequently unequally so, or not decurrent but shallowly (1–2 mm) and unequally auriculate at the base; venation pinnate with 2–5 pair of nerves (lowest pair intramarginal and often very faint) arising from the mid nerve in the lower $\frac{1}{4}$ of the blade and arching with only the upper nerves reaching the tip, slightly raised near the base or completely sunken above, raised and tapering below, rugose when dry; secondary venation pinnate from each of the main nerves, very faint to invisible, reticulate; 20–33 cm long, 6.5–14 cm wide; dark green, veins often red below; drying with a roughened texture, dull brown above, lighter brown and often with an olive hue below; petiole 5–7 mm long, 3–4 mm wide, glabrous; nodes densely covered with numerous setaceous bristles 1–2 cm long, drying tan, glabrous; inflorescence a terminal panicle of cymes, glabrous, often pendulous, 12–27 cm long, 9–15 cm wide, many flowered; axes fleshy, 4-angled or 4-winged, glabrous, red; blackish or khaki-tan when dry; bracts whorled, lanceolate, acute, 5–10 mm long, 1–3 mm wide, reflexed; primary axes 10–23 cm long, 4–7 mm thick at the base when dry, with 3–5 nodes; secondary axes 2–6.5 cm long, 1.0–1.5 mm thick, with 1 or 2 nodes, longest at lowest node of the primary axis; tertiary axes 7–14 mm long, 4th axes usually not developed, up to 3 mm long; pedicels 4–5 mm long, pink to deep rose; calyx campanulate, glabrous, widened above the ovary, rim truncate with 4 or 5 thickened points not or minutely elevated above the rim, 4–5 mm long, 3–4 mm wide, pink or red; petals 4 or 5, thin, oblong, acute at the tip, narrowed to a broad claw at the base, 7 nerved from the base, lateral veins not reaching the tip, 10–12 mm long, 6–8 mm wide, white or pink; stamens 10, equal in size and shape, inflexed and inversed in bud; filaments flattened, c. 5 mm long, blue or pink; anthers curved, locules each with a bulbous spur, connective with a thickened ridge near the filament and ending in a short (c. 0.5 mm) appendage, 5–6 mm long, purple or violet with yellow spurs and appendage; style slender, c. 5 mm long, red; infructescence axes elongating slightly; fruit globose, glabrous, 6–7 mm diameter, narrowed to the areolus which is c. 5 mm wide and 1 mm high, smooth internally; exocarp and pericarp c. 0.25 mm thick; fruit red, violet, then purple when ripe; dark brown to blackish with a rugose texture when dry; seeds numerous, ovate, smooth, c. 1 mm long.

Figure 13: a. calyx, b. petal, c. stamen.

Vernacular: neualu (Raub, Pahang).

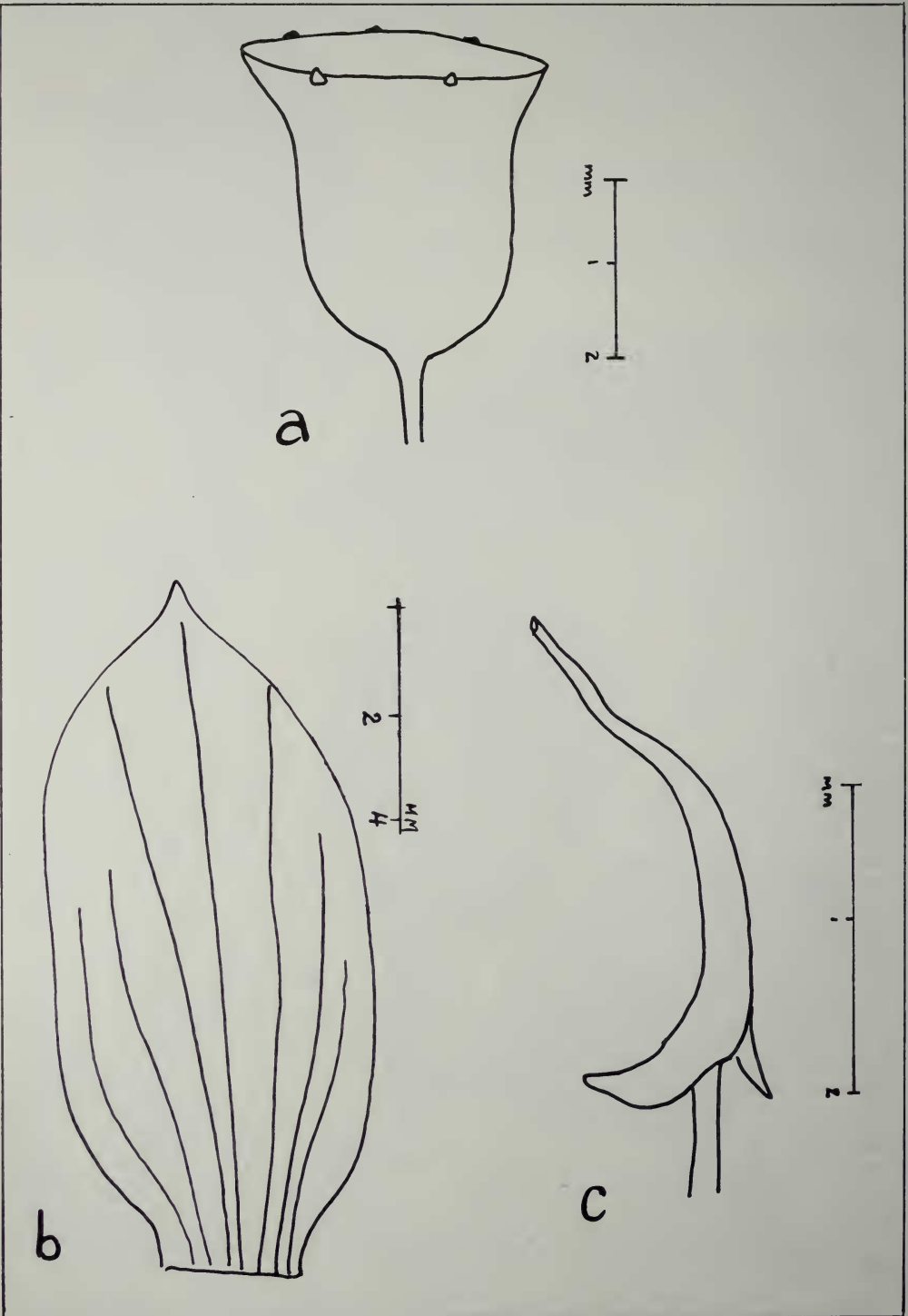


Figure 13. *Medinilla speciosa* (Reinw. ex Bl.) Bl., a-c Sinclair & Kiah 38789.

Habitat: shaded, moist areas.

Distribution: Penang, Pahang, Perak, Selangor; 500–1200 m.

The thick, 4-angled to 4-winged branches; large, terminal inflorescence with numerous flowers and multicoloured parts; whorled leaves; and bristly nodes distinguish this species.

MALAYSIA

Penang — I.H. Burkill 2673; Curtis 874, sn in May 1893; Penang Hill: Hullett 319; Ridley sn in Dec. 1895.

Perak — Bujong Malacca: Ridley sn in Sept. 1898; Gunong Bubu For. Res.: Hou 672; Jor Batang Padang: Henderson 10836; Larut Hill: Derry sn in 1900; Maxwell's Hill: Sinclair & Kiah 38789, Wray 3218; Taiping: Derry sn on 2 Oct. 1899; Tapah Hills: Ng 1286.

Selangor — Bukit Telaga, Semangkok Pass: Ridley sn on 21 June 1921; Pahang Track: Machado sn in 1903; 15th mile Pahang Track: Ridley sn in July 1897; Semangkok For. Res.; Chan 13301; Tras-Track: Ridley sn in Aug. 1904.

Pahang — Kuala Kubu Bharu: Calderbank 172; Pulau Tioman — Gunong Kajang: Kadim & Noor 592; Gunong Rokam: Nur 18792; Raub: Jinal 20369.

Malacca — Maingay 798.

14. *Medinilla succulenta* (Bl.) Bl., Flora 14 (1831) 513. *Melastoma succulentum* Bl., Bijdr. Fl. Ned. Ind. 17 (1826) 1070; *Medinilla emarginata* Craib, Kew Bull. 1930, 322 syn. nov.; *M. holttumi* Henderson in sched. Herb. Sing.

Epiphytic shrub; branches fleshy, cylindric or slightly 4-angled, glabrous, smooth to sparsely lenticellate-pustulate, c. 2 mm thick; older branches with scattered adventitious roots, pustules more numerous, up to 7 mm thick; epidermis drying tan-brown, nodes prominent; leaves opposite, without axillary bristles or hairs; blades fleshy coriaceous, oblanceolate, elliptic, to obovate, acute to shortly (up to 5 mm) acuminate at the tip, narrowed and cuneate-decurrent, often shallowly auricled (petiole appearing winged) at the base; mid-nerve sunken above, raised and tapering below, with 1 pair of nerves arising from near the base (3-plinerved); transverse venation obscure to invisible; 6.5–20 cm long, 2.5–7.5 cm wide; drying brownish, often with an olive-green hue, on both surfaces, thin; petiole 1–3 mm long, 1–2 mm thick; inflorescence cymose, mostly from leafless nodes, glabrous, 1.5–2.5 cm long; axes cylindric, fleshy, light pink; bracts and bracteoles lanceolate, acute, 0.5–0.75 mm long; primary axes 1 or 2 from each axil, with 1 or 2 nodes, 3–10 mm long; secondary axes not developed or 3–5 mm long, with 1 or 2 nodes; pedicels c. 3–6 mm long; calyx campanulate-urceolate, 3–4 mm long, c. 3 mm wide, with 4 sub-marginal cusps. orange; petals 4, thin, oblong-obovate, acute with a thickened cusp at the tip, truncate at the base, 6–7 mm long, c. 4 mm wide, white or pale pink; stamens 8, filaments c. 4 mm long, flattened, white; bud anthers cylindric, straight, c. 5 mm long, mauve; connective slightly crested, with a linear appendage at the base, locules each with a shorter appendage; stigma capitate, style slender, c. 8 mm long; fruit globose, c. 5 mm diameter, areolus c. 2 mm wide, not or slightly raised; exocarp thin, bright pink to red when ripe, drying tan to blackish; seeds numerous, ovate to obovate, hilum flattened, c. 1.5 mm long, testa finely reticulate, brown-tan.

Figure 14: a. inflorescence, b. calyx and corolla bud, c. petal, d. stamen.

Distribution: lower peninsular Thailand, Malaysia, Sumatra, Java.

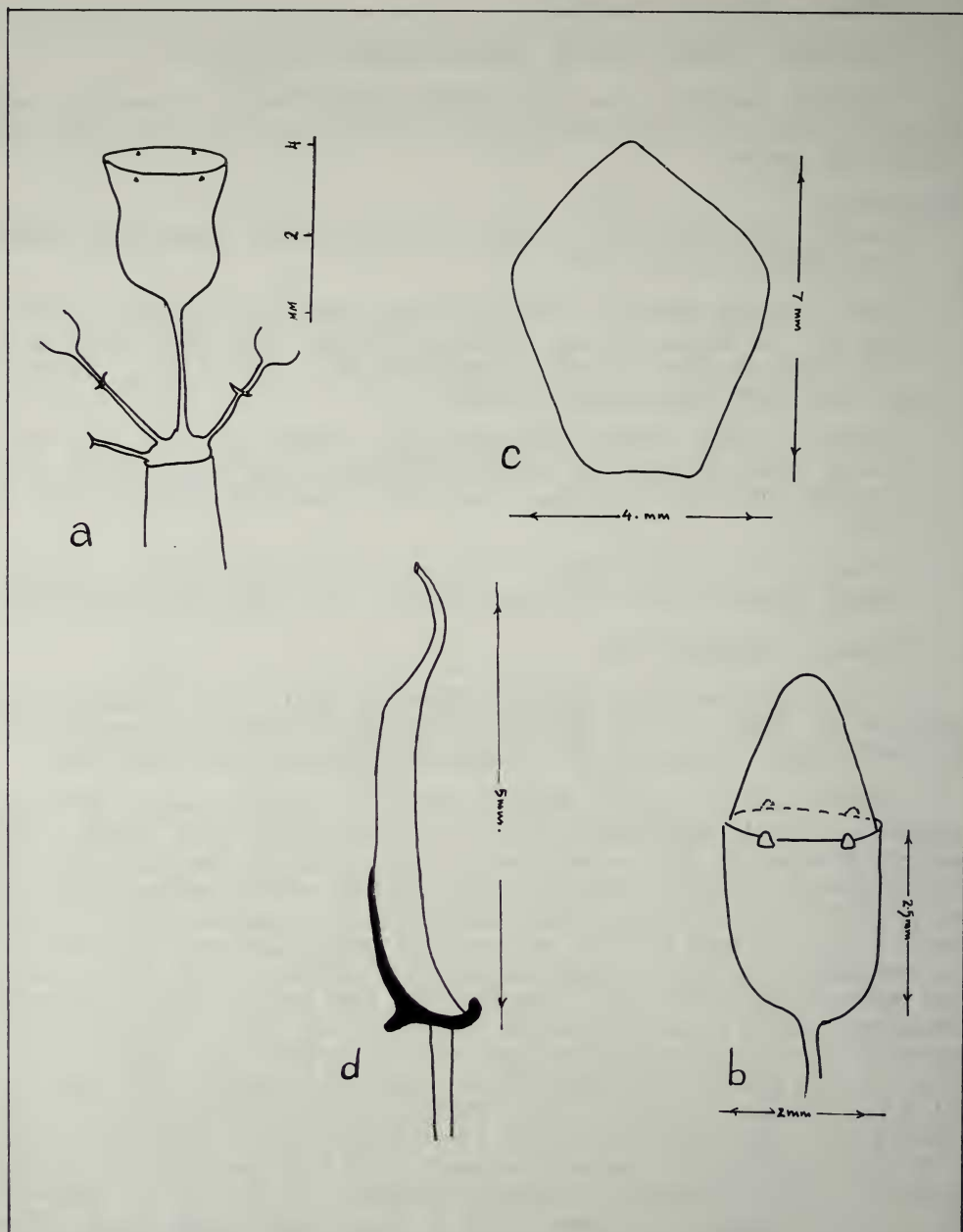


Figure 14. *Medinilla succulenta* (Bl.) Bl., a-d Kerr 7773 (holotype *M. emarginata* Craib).

The cylindric, or nearly so, smooth branches; nearly sessile leaves which are thin when dry; small flowers, and globose fruit distinguish this species from *M. rubicunda* (Jack) Bl. (q.v.) and *M. crassifolia* (Reinw. ex Bl.) Bl. (q.v.).

The holotype of *M. emarginata* Craib (Kerr 7773, from Thailand) at Kew matches the holotype of *M. succulenta* (from Java) at Leiden. Craib notes that *M. emarginata* is closest to *M. scortechinii* King (q.v.) which has much larger, coriaceous leaves and a larger inflorescence. The alliance, in my estimation, is remote.

Nur 24970 in the Singapore collection is labeled *M. holttumi* Hend. which, as far as I can determine, was never published and is therefore an invalid (*in schedā*) name. This specimen matches other collections of *M. succulenta* at Singapore and Leiden.

THAILAND

Pantani — Betong: Kerr 7603; Kao Kalakiri: Kerr 7773 (type *M. emarginata* Craib).

MALAYSIA

Perak — Jor Camp: Henderson 10822; Ulu Temango: Ridley 14624.

Kelantan — Gua Panjang, Ulu Kelantan: UNESCO 629; Sungei Terang, Sungei Lebir: Henderson 29640.

Selangor — Ginting Simpah: Ridley, Robinson, Kloss sn in March 1917.

Pahang — 15th mile Jua Batu: Ridley sn; Sungei Sat, Ulu Tembeling: Henderson 22086; Sungai Teku: Holttum 20559; Tahan River: Ridley sn in July 1890.

Johore — Gunong Brechora: Holttum 10849; Gunong Panti: Ridley sn on 6 Dec. 1892; Kwa Kaching: Lake & Kelsall sn; Labis For. Res.: Rao 4236 (K6697); Sungai Endau: Holttum 24970, Nur 24970; Tanjong Tergamah: Fielding sn in Oct. 1892.

15. *Medinilla varingiaefolia* (Bl.) Nayer, Blumea 18 (1970) 569; *Melastoma varingiaefolium* Bl., Bijdr. Fl. Ned. Ind. 17 (1826) 1071; *Pachycentria varingiaefolia* (Bl.) Bl., Flora 14 (1831) 520 and Bakh. f., Rec. Trav. Bot. Neerl. 40 (1943-45) 126; *P. scandens* Ridl., J. Mal. Br. Roy. As. Soc. 1 (1923) 61; *Medinilla heteranthera* King, J. As. Soc. Beng. 69, II: 1 (1900) 61 *syn. nov.* including var. *latifolia* King l.c. 61 *syn. nov.*

var. *varingiaefolia*.

Shrub, often spreading, up to 3 m tall, epiphytic or terrestrial; roots frequently swollen or tuberous; branchlets cylindric, smooth, succulent, glabrous, reddish, becoming ridged and grooved or wrinkled, 2–2.5 mm thick, dark purple-brown when dry; blades opposite, fleshy, coriaceous, glabrous, lanceolate to ovate, acuminate at the tip (acumen 0.5–1.0 cm long), acute to somewhat rounded and shortly decurrent (2–3 mm) at the base; venation 3 nerved from the base, nerves sunken above, raised (mid-vein more prominent) and tapering below, reddish; secondary venation pinnate from the mid-vein, usually invisible above, obscure to invisible

below; dark glossy green, often with a pinkish hue above, reddish below; drying with a roughened texture, light to dark brown above, darker brown and often with an olive hue below; 5.5–7 cm long, 2.0–5 cm wide; petiole 10–17 mm long, 1.0–2.5 mm thick, glabrous; inflorescence a panicle of cymes or of solitary flowers, terminal, 3–6 cm long; axes glabrous, succulent, red, rugose and tan-brown when dry; bracts and bracteoles linear-lanceolate, acute, 1–3 mm long, glabrous; primary axes 1–2 cm long with 1 or 2 nodes, c. 1.5 mm thick; secondary axes not developed (in solitary flowers) or up to 1 cm long, tertiary axes not developed or 5–8 mm long, pedicels 4–7 mm long; calyx tube cylindric or narrowed above the ovary, gradually widening and becoming funnelform, rim truncate to undulate, often thin, with a linear to triangular, acute cusps, ciliate or glabrous, c. 0.5 mm long; entire calyx 5–10 mm long, 4–6 mm wide, pinkish-tan to red, rugose and tan when dry; smooth internally; corolla buds conical to dome shaped, lobes imbricating to the right, tips 4, coherent in a pointed tip, glabrous; mature petals thin, oblong to ovate, acute and tipped with a thickened cusp, truncate at the base, 12–19 mm long, 7–9 mm wide, waxy white tinged with red or pink or cream in the upper half, pink-reddish in the lower part; stamens 7, 8 or 9, 3–4 long and 4 or 5 short, curved, glabrous, anthers yellow; filaments flattened, white, short ones, c. 6 mm long, long ones c. 10 mm long, locules of short anthers with a curved claw at the base, connective with a single dorsal projection (spur) near the filament, 5–7 mm long; long anthers 6–10 mm long, each locule with a bulbous claw, connective without a spur, stigma minute, extra-ovarial chambers and speta none; style slender, white, c. 20 mm long; fruit urceolate, capped by the persistent calyx, 7–9 mm wide, c. 10 mm long, areolus c. 5 mm wide, exocarp green turning red, glabrous, rugose when dry; pericarp c. 1/5 mm thick; seeds numerous, ovoid, c. 0.75 mm long, testa minutely papillose-reticulate, glossy tan.

Figure 15: a. calyx, b. petal, c. long stamen, d. short stamen. Plates 6 & 7.

Distribution: upland forests, 1000–2200 m elevation, Pahang, Perak, Keman.

The terminal inflorescence and unequal stamens distinguish this species from all other *Medinilla* in the region.

The type collection of *M. varingiaefolia* (Bl.) Nayar (Kuhl and van Hasselt s.n., from Java) at Leiden consists of 3 sheets all with fruit. As the flowers for this species were not available, Blume assumed that it was *Pachycentria* since the fruit of the two genera are similar. This species has only been collected on a few occasions from Java and Sumatra, thus the species was poorly known. Bartlett 6569, from Sumatra, has leaves and branches which match the type collection of *M. varingiaefolia*, and the specimen also has flowers which match those of King's coll. 3291 — a syntype of *M. heteranthera* King. There is no doubt in my mind that *M. heteranthera* is the same as *M. varingiaefolia*. Constant features of all flowering specimens of this species that I have examined are the four long anthers with an extension of each locule and unappendaged connective, and short anthers with locule appendages and a spurred connective. The leaves vary in texture from sub-coriaceous to coriaceous. *M. varingiaefolia* var. *bakhuizenii* (Nayar) Maxw. (q.v.) differs in having thicker, more obtuse leaves, a longer calyx, and a connective spur on the long anthers.

King mentions that *M. heteranthera* resembles *M. horsfieldii* Miq. (reduced by Bakh. f. (l.c. 187) to a synonym of *M. laurifolia* (Bl.) Bl.) which has a distribution from Sumatra to the Celebes, is an entirely different species which has

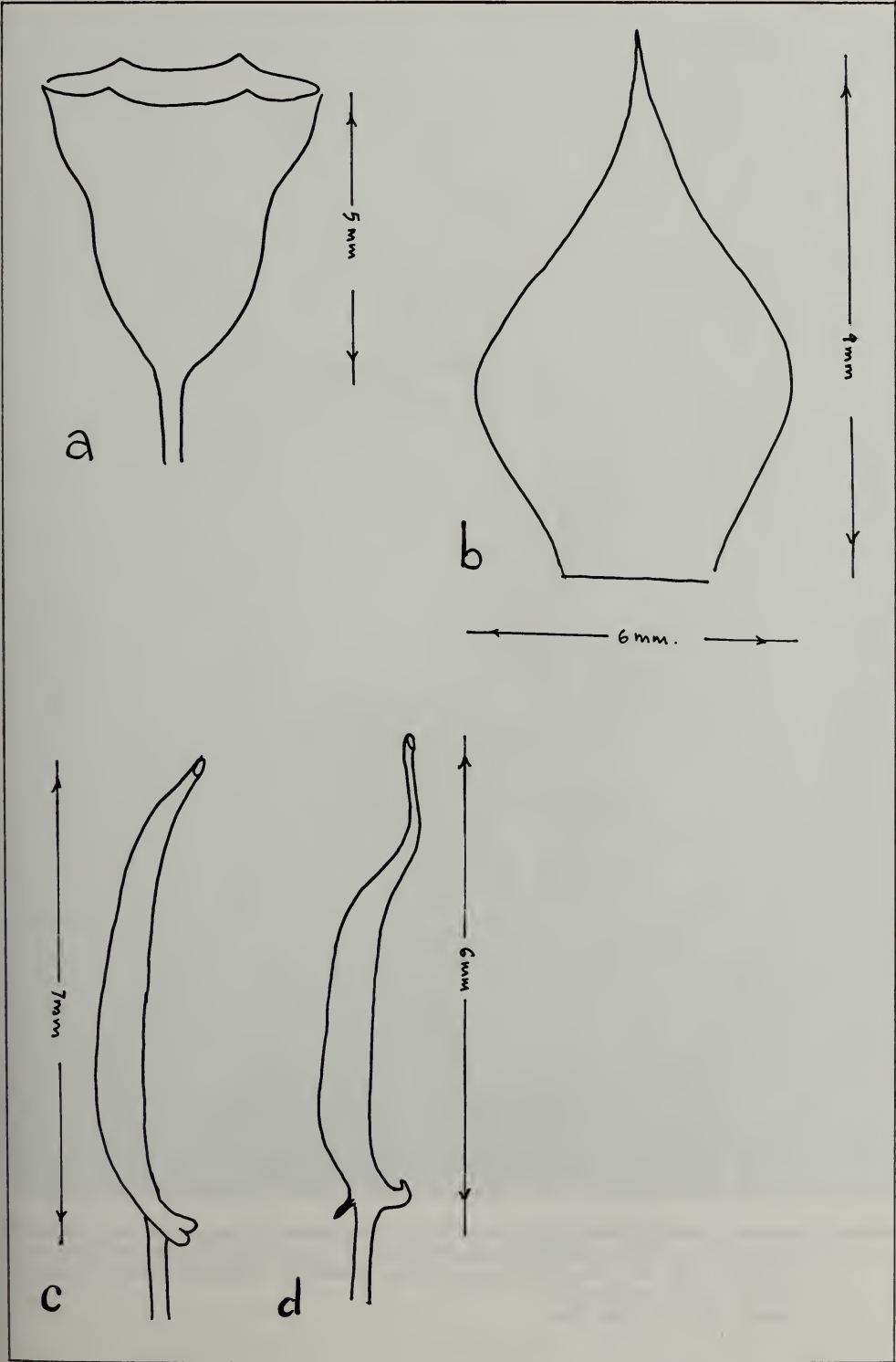


Figure 15. *Medinilla varingiaefolia* (Bl.) Nayar, a-d King's coll. 3291 (syntype *M. heteranthera* King).



Plate 6. *Medinilla varingiaefolia* (Bl.) Nayar var. *varingiaefolia* showing the tuberous roots and shrubby habit. Collected by Dr. Hsuan Keng from a sandstone outcrop in a thicket near the top of Gunong Bunga Buah, c. 1700m, Genting Highlands, Selangor in November 1977.
Photo: Mr. Douglas Teo.



Plate 7. Branch and inflorescence of *Medinilla varingiaefolia* (Bl.) Nayar var. *varingiaefolia*, Maxwell 78-205; Tanah Rata, Cameron Highlands, Pahang; 16 April 1978.
Photo: Dr. Ivan Polunin.

tan, pustulate stems; and equal stamens. The leaves of the two species are similar, however.

Bakh. f. (l.c. 148) divided *Medinilla* into two sections, viz. *Eu-Medinilla*, with species having a thick (1–2 mm) calyx tube, and unequal anthers; and *Hetero-Medinilla* having species with a thin (0.5 mm) calyx tube, and equal anthers. *M. varingiaefolia* has a thin calyx tube and unequal anthers; and does not, therefore, fit properly into either section. *M. teysmanni* Miq. is included, as an exception with unequal stamens, in *Hetero-Medinilla*. It is found in the Philippines, Celebes, and Moluccas; and is entirely different from *M. varingiaefolia*.

Medinilla heteranthera King var. *latifolia* King merely differs from the typical variety in having wider blades which are shortly (c. 1 cm) acuminate at the tip and caudate at the base. I have examined both syntypes of this variety and they do not differ from some of the specimens in the Singapore collection which have both narrow (typical variety) and var. *latifolia* blades (e.g. Williamson, s.n. from the Cameron Highlands, Jan. 1932; and Henderson 17919). The flowers of var. *latifolia* are the same as those of the typical variety. Since there are no structural or distinct vegetational characteristics of var. *latifolia* to maintain it as a separate taxon, I have reduced it to a synonym of *M. varingiaefolia*.

Perak — Gunung Batu Patch: King's collector 8017 (syntype *M. heteranthera* King var. *latifolia* King); Wray 268 (syntype *M. heteranthera* King var. *latifolia* King); 397 (syntype *M. heteranthera* King); Larut: King's collector 3291 (syntype *M. heteranthera* King), 3644 (syntype *M. heteranthera* King), 6304 (syntype *M. heteranthera* King), 6904 (syntype *M. heteranthera* King); Larut Hill: Derry (Curtis 3707); Maxwell's Hill: I. H. Burkill & Haniff 12952, Ridley & Curtis 5346, Shah & Sidek 1044, Whitmore 12902.

Trengganu — Bukit Kajang, Kemaman: Corner sn.

Pahang — Cameron Highlands: H.M. Burkill 829; Chew 745, 1257; Henderson 17811, 17919; Nur 32673, Poore 1071; Rao Keng, Avadhani 53 (K8046); Symington 20918, 21002; Williamson sn in Jan. 1932; Fraser's Hill: I.H. Burkill & Holtum sn 16–30 Sept. 1922; Gunong Berembun, Cameron Highlands: Whitmore 15487; Gunong Sasar, Cameron Highlands: Whitmore 15575; Pine Tree Hill: Nur 11063; Tanah Rata: Maxwell 78–205, Samat 369.

16. *Medinilla varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw. comb. nov., *M. bakhuizenii* Navar, Blumea 18 (1970) 569 new name for *Pachycentria speciosa* Ridl., J. Fed. Mal. St. Mus. 6 (1915) 149 and Fl. Mal. Pen. 1 (1922) 806.

This variety has one major structural feature which I feel merits distinction from the type species, viz. the presence of a spur on the connective of the long anthers. This is a constant feature, and in all flowering material of the type species that I have examined the long anthers lack any trace of a spur. This spur in var. *bakhuizenii* is c. 0.5 mm long. The locule appendages of the long anthers and morphology of the short anthers of the two taxa are identical.

The leaves of var. *bakhuizenii* are thick coriaceous, obtuse; and the calyx is longer with a more pronounced ovary and more acute calyx cusps. Fruiting material of the two taxa are identical. The variety is known only from a few collections from Pahang at elevations of 1100–1600 meters, and is found within the range of distribution and in similar habitats as the type species.

Figure 16: a. calyx, b. petal, c. long stamen, d. short stamen.

Pahang — Gunong Tahan: Ridley 16339 (type *Pachycentria speciosa* Ridl.); Pine Tree Hill, Fraser's Hill: H.M. Burkill, Shah, Noor 2376; Purseglove 4232.

17. *Medinilla venusta* King, J. As. Soc. Beng. 69, II:1 (1900) 61; *M. venusta* King var. *chionantha* (Stapf) Ridl., Fl. Mal. Pen. I (1922) 802, *M. chionantha* Stapf, Kew Bull. 1906, 73 *syn. nov.*; *M. gratiosa* Stapf, Kew Bull. 1933, 184 and Ballard in Curtis's Bot. Mag. 1935, tab 9386 *syn. nov.*

Terrestrial or epiphytic shrub, up to 5 m tall, or a climber; branches cylindric, covered with raised pustular tubercles, glabrous, epidermis at first brownish, then khaki-tan with age; 3–5 mm thick when dry; stem with more prominent pustules, otherwise similar to the branches, 9–14 mm thick; bark thin, smooth, finely fissured, tan; wood dense, pith hollow; leaves opposite, glabrous; blades coriaceous (often fleshy), narrowly to broadly elliptic, less frequently lanceolate, acute at the tip, gradually narrowed and decurrent or in larger blades shallowly (2–5 mm) auriculate or sub-cordate at the base; mid-vein with a prominent pair of nerves arising from near the base, and with 1 pair of intramarginal nerves 2–6 mm from the margin, main veins sunken above, raised and arching to the tip on the under-surface, often pustulate near the base; (10) 14–22 cm long, (3) 6.5–12 cm wide; transverse venation pinnate, very obscure to invisible on both surfaces; drying brown above, lighter brown below; with a rugose texture and frequently with an olive hue on both surfaces; petiole 2–8 mm long, 3–4 mm thick, often appearing sessile with decurrent blades, glabrous; inflorescence cymose, from leafless and leafy nodes, or terminal, few to many flowered, glabrous, 3–8 cm long; primary axes flattened, pink to red; primary axes 1–3 per axil, 1–5 cm long, 2 mm thick, generally with 1, sometimes 2 or 3, nodes; secondary axes 3–5, whorled, 1.0–1.5 (2.2) cm long, 3d axes not developed or up to 5 mm long; 4th axes not developed or up to 2 mm long; pedicels 5–7 mm long, slightly longer in fruit; bracts and bracteoles lanceolate-ovate, acute, up to 0.5 mm long; calyx campanulate, glabrous, truncate, margin with 5 minute thickenings, not or very shortly raised (denticulate); 4–9 mm long, 4–6 mm wide, pink; petals 4 or 5, thin, elliptic-oblong, asymmetric, irregularly oblique and broadly rounded with a mucro at the tip, clawed at the base, 12–22 mm long, 7–14 mm wide, white often with a pink or red hue, reflexed at maturity; stamens 8 or 10, equal; filaments flattened, 6–8 mm long; anthers cylindric and curved, 6–7 mm long, c. 1 mm wide, whitish or yellow, narrowed at the apex, connective ridged with a keel-like wing near the base, or spurred; locules each with an elongate, bulbous appendage which is longer than the connective appendage, yellow or white; stigma capitate, minute; style slender, 10–18 mm long, red; fruit globose, 8–9 mm diameter, areolus 7–8 mm wide; exocarp pink to red, drying tan to black; pericarp c. 0.5 mm thick; seeds numerous, ovoid, finely and minutely reticulate, c. 1 mm long.

Figure 17: a. inflorescence, b. calyx, c. petals, d. stamens. Plates 8 & 9.

This species is distinct with its pustulate stems, opposite, 3-nerved blades, complex axillary or terminal inflorescence, and relatively large flowers. The closest relative is *M. scortechinii* King (q.v.) which has smoother branches, larger inflorescences, smaller flowers with a lobed calyx, and different anthers.

M. javanensis (Bl.) Bl., from Sumatra and Java, has similar leaves, but can be readily distinguished from *M. venusta* by the quadrangular, smooth or sparsely pustulate branches which dry tan, and smaller flowers. *M. verruculosa* (Bl.) Bl. has leaves and pustulate stems which resemble *M. venusta*, however most of its parts are red-brown furfuraceous, and the flowers are smaller. The leaf shape resembles that of *M. venusta*, but the blades are 5–7 plinerved and the secondary venation is much more prominent.

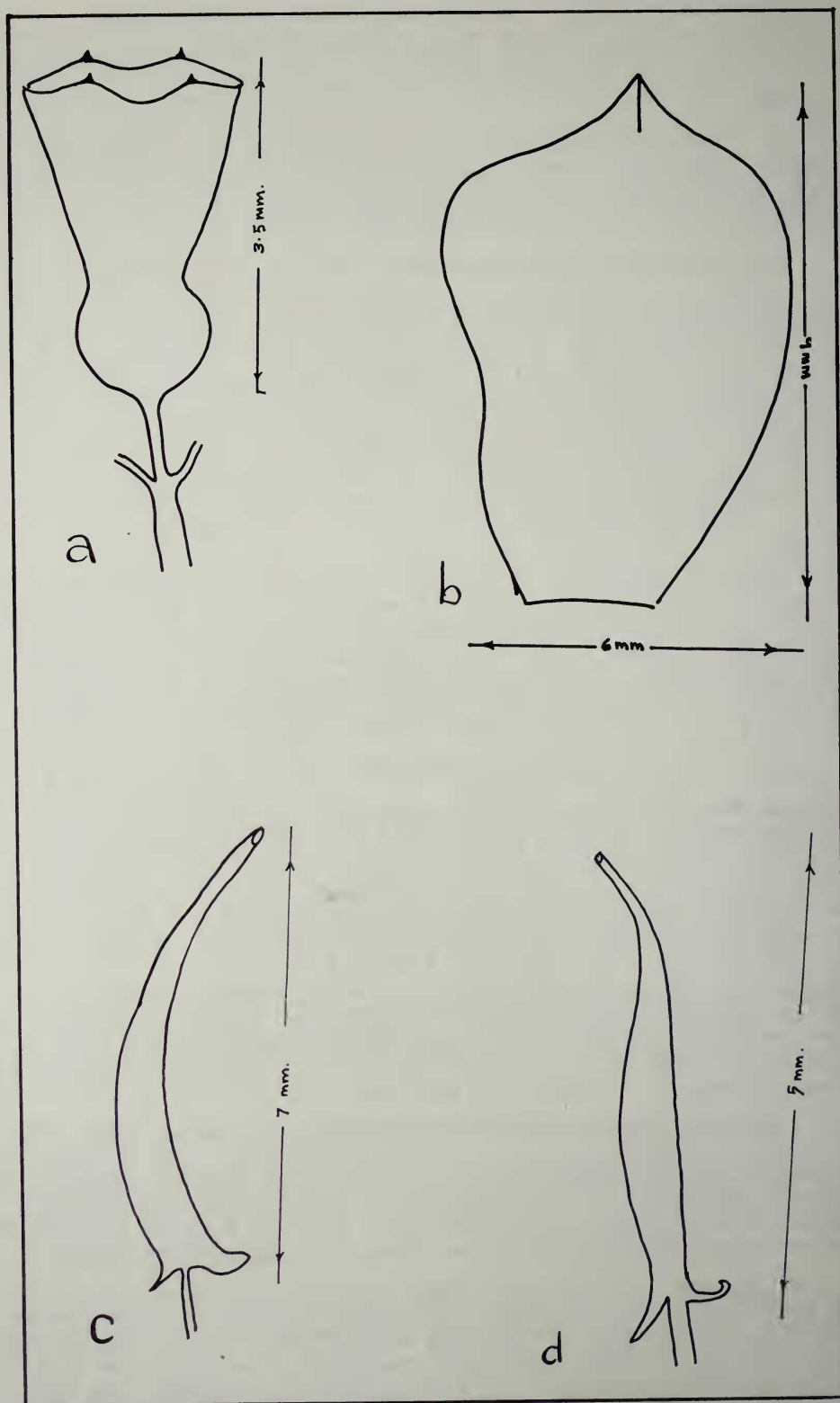


Figure 16. *Medinilla varingiaefolia* (Bl.) Nayar var. *bakhuizenii* (Nayar) Maxw., a-d Ridley 16339 (holotype *Pachycentria speciosa* Ridl.).

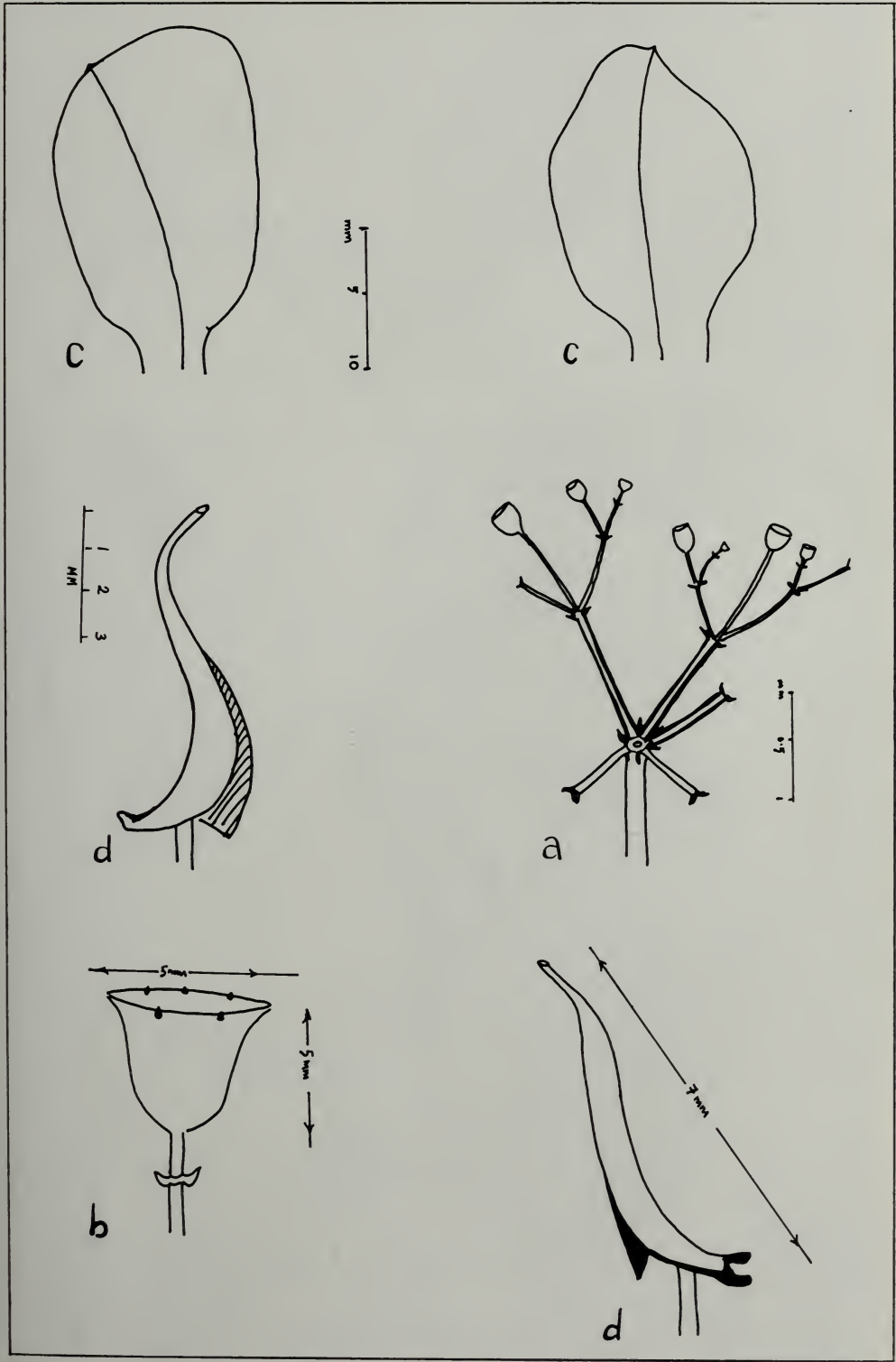


Figure 17. *Medinilla venusta* King, a & b H. M. Burkill 2880, c & d Sinclair & Kiah 38610.



Plate 8. Holotype of *Medinilla chionantha* Stapf (= *M. venusta* King) at Kew. Cultivated by Veitch from seeds sent by Curtis which were collected in Perak.



Herb. Lugd. Bat.
Medinilla graciosa Stapf
Kew cult. s.v.
Holtum 15 June 1933

CULT. IN HORT. BOT. REG. KEW., A.D. 1933.
Medinilla graciosa Stapf
from Fraser's Hill
Buitenzorg, Java
9/1/33
Det. M. S. P. 1936

Mr Cotton, M. Chironomus
will you please name
the *Medinilla* sp. from
Fraser's Hill F. M. S. 1932

Plate 9. Type collection of *Medinilla graciosa* Stapf at Kew. Cultivated at Kew from seeds sent by R. E. Holtum collected at Fraser's Hill. The species is now a synonym of *Medinilla venusta* King. Photo: Rijksherbarium, Leiden.

Another species, *M. chionantha* Stapf, is undoubtedly the same as *M. venusta* King, and Ridley considered it a variety of the latter. The main distinction of this variety is that it has 10 stamens. Stapf described this species from cultivated plants in England which were grown from seeds sent by Curtis from Perak. One specimen, Ridley s.n., from Thaiping Hills, Perak; has the note "doubtless var. *chionantha*" written on the sheet. Cantley 2011, from Maxwell's Hill, Perak; is perhaps another collection which represents Stapf's species. The stem, leaves, inflorescence, and calyx of these specimens which are most likely var. *chionantha*, do not differ from the holotype of *M. venusta* King. Other collections of which I am certain have 10 stamens include: Wray 700, Ridley 2932, Anderson 16, Sinclair & Kiah 38610, and H.M. Burkill 2880. These specimens, except for the number of stamens, do not differ from the type collection of *M. venusta* King. Stapf notes that *M. chionantha* is close to *M. longipedunculata* Cogn. and *M. succulenta* (Bl.) Bl. — the difference with *M. chionantha* being narrower, 3-nerved, basally long attenuate blades; with more and larger flowers on a shorter inflorescence. *M. longipedunculata* Cogn. has 5-nerved blades, a minutely 5-denticulate calyx, and smaller flower parts than the specimens of *M. venusta* King and *M. chionantha* Stapf that I have examined. *M. succulenta* (Bl.) Bl. (q.v.) has a shorter inflorescence; smaller, 4-merous flowers, a dentate calyx, and reddish-white petals.

Included in the Singapore and Leiden collections are specimens which, in respect to the pustulate stems, opposite leaves, and flowers are identical to *M. venusta* King. These specimens, however, have a terminal inflorescence which is structurally the same as those specimens of *M. venusta* with axillary inflorescences. The leaves of some of the specimens with a terminal inflorescence are smaller, however some collections have both small and the typically large blades common to the more common form of the species. The type collection of *M. gratiosa* has both terminal and axillary inflorescences.

Furtado, obviously confused by the terminal inflorescence, apparently did not examine the flowers of these specimens closely since they have the truncate calyx, 5 thin petals with asymmetric tips, and anthers which are identical to those of *M. venusta*. He annotated these specimens as "*Medinilla trinervia* vel affinis". The original identifications were *M. venusta* King or *M. hasseltii* Bl.

Medinilla trinervia Cogn. (Mono. Phan. 7 (1891) 596) with sharply 4-angled and smooth branches; and smaller, 4-merous flowers with unappendaged anthers is not at all like the specimens discussed here. On one sheet (Henderson & Nur 11246) Furtado noted that *M. curtisii* Hk. f. may be close since it has 5-merous flowers. However, *M. curtisii* has smooth branches and stems, and lacks an anther crest.

The type collection of *M. gratiosa* (3 sheets) is from a specimen grown at Kew from seeds collected at Fraser's Hill. It has smaller leaves and smaller flowers than *M. chionantha*, but otherwise the calyx, petals, and the 10 stamens are identical.

The narrow blades of *M. gratiosa* are not uncommon and in several collections, e.g. Stone 8326, H.M. Burkill 1991, both from Fraser's Hill, both lanceolate and elliptic blades are found on the same specimen.

Stapf notes that *M. gratiosa* is close to *M. curtisii* Hk. f., but that species has smooth, bluntly 4-angled branchlets; and sessile, cordate blades, Ballard, however, suggested a strong alliance with *M. chionantha*.

Distribution: lower peninsular Thailand to central Malaysia in evergreen forests 500–1700 m elevation.

Kedah — Langkawi Island: Kerr 21729.

Perak — Caulifields Hill: Wray 700; The Cottage: Ridley 2932; Larut: King's collector 2390 (*type*): Larut Hill: Anderson 16; Maxwell's Hill: I.H. Burkill sn in March 1924, I.H. Burkill & Haniff 12928, Curtis 2011 Hons. stud. Univ. Sing. 33, Sinclair & Kiah 38610; Thaiping Hill: Ridley sn; sine loc.: Curtis sn (*type M. chionantha* Stapf).

Selangor — Sungei Telum: Poore 525; Genting Highlands, Gunong Ulu Kali: Maxwell 78-89.

Pahang — Blue Valley, Cameron Highlands: Chew 1267; Fraser's Hill: Addinson sn in Sept. 1940, H.M. Burkill 1991; I.H. Burkill & Holttum 8430, 8554; J.C. (Carrick) 1607 (2537), Franck 1441, Henderson & Nur 11246, Kalong 22371, Keng, Chow, Hons. stud. 4744, Keng & Hons. Stud. 95, Kew Herb. sn (*type M. gratiosa* Stapf); Purseglove 4178, 5524; Samat 96, Shah 2741, Shah & Noor 736, Stone 8326, Watson 11515; Gunong Benom: Strugnell 22325; Gunong Jasar, Cameron Highlands: Whitmore 15566; Kuala Keria, Cameron Highlands: H.M. Burkill 2880; Sungei Bertam: Henderson 11123; Sungei Pauch Valley, Cameron Highlands: Chew 754; Tanah Rata, Cameron Highlands: Henderson 17738; Telom: Ridley 13690; Cameron Highlands: Nur 32924; Rao, Keng, Avadhani 66 (K8059).

PACHYCENTRIA Bl.

Blume, *Flora* 14 (1831) 519 and *Bijdr. Nat. Wet.* 6 (1831) 259; Naudin, *Ann. Sci. Nat. ser. III*; 15 (1851) 299; Triana in *Trans. Linn. Soc.* 28: 1 (1871) 89; Clarke in *Hk. f. Fl. Brit. Ind.* II (1879) 565 (*in nota*); Cogniaux in *DC. Monogr. Phanero.* 7 (1891) 605; King, *J. As. Soc. Beng.* 69, II: 1 (1900) 66 (*Mat. Fl. Mal. Pen.* 474); Ridley, *Fl. Mal. Pen.* I (1922) 805; Craib, *Fl. Siam. Enum.* I: 4 (1931) 701; Bakh. f., *Rec. Trav. Bot. Neerl.* 40 (1943-45) 120; Henderson, *Malay Nat. J.* 4: 3 & 4 (1949) 140 and *Malay. Wild Fls.* I (1959) 140; Nayar, *Bluea* 28:2 (1970) 567.

Epiphytic shrubs up to 2 m tall; lower stems and roots often irregularly swollen or tuberous, adventitious roots common; branchlets cylindric, flattened and 2-grooved, or somewhat 4-angled, smooth and furfuraceous, glabrescent; leaves opposite, simple; blades sub-coriaceous to coriaceous, usually glabrous, entire, lanceolate to sub-orbicular, acute to rounded at the tip, narrowed at the base, mid-nerve with a single pair of thinner intramarginal nerves; petioles distinct; inflorescence cymose, often paniculate with tertiary axes, terminal, terminal and axillary, or of solitary flowers; axes flattened to 4-angled, furfuraceous, pedicels distinct; calyx funnelform, less frequently campanulate, narrowed to the globose ovary, minutely furfuraceous and often ribbed outside, up to 4 mm long, margin truncate with 4 cusps or lobes; petals 4, thin with visible venation, oblong to ovate, acute at the tip, truncate at the base, 3–6 long; samens 8, equal; anthers oblong, straight, opening with a single oblique pore at the tip. 2–3 mm long, connective with a basal spur, locules inappendiculate; stigma minute; style slender, rising to a height slightly above the tip of the anthers, collared at the base; extra-ovarial chambers and septa none; ovary glabrous, 4-loculed, placentation axile with 4–8 many ovules on each; fruit a berry, globose, 4–6 mm wide, capped by the neck-like calyx tube (giving an urceolate appearance), exocarp smooth or papillose-muricate, epicarp soft and juicy or pulpy; seeds few to numerous, oblong to ovate, c. 0.75–2 mm long; testa finely reticulate.

KEY TO THE SPECIES OF *PACHYCENTRIA*
FROM THE MALAY PENINSULA

1. Inflorescence a multiflowered panicle of cymes, 2–6 cm long; blades lanceolate to obovate, 4–12 cm long, 1–5 cm wide, ovules 3–4 or more than 10 in each locule ...
 2. Calyx with 4 cusps, anthers spur glabrous; fruit smooth, seeds 10–15, oblong, 2 mm long ... *Pachycentria constricta* (Bl.) Bl. (18)
 2. Calyx with 4 triangular lobes (c. 1 mm long), anther spur often pilose; fruit papillose-muricate, seeds more than 25, ovate, c. 0.75 mm long ... *Pachycentria microsperma* Becc. (20).
1. Inflorescence of few flowered cymes up to 1.5 mm long, or of solitary flowers; blades obovate to sub-orbicular, 1.5–3 cm long, 1–2 cm wide, ovules 6–8 in each locule ... *Pachycentria maingayi* (Cl.) Maxw. (19).

18. *Pachycentria constricta* (Bl.) Bl., Flora 14 (1831) 519; *Melastoma constrictum* Bl., Bijdr. Flor. Ned. Ind. 17 (1826) 1049; *Pachycentria tuberculata* Korth., Ver. Nat. Gesch. Bot. (1839–1842) 246, tab 63; King, J. As. Soc. Beng. 69 II:1 (1900) 66, Ridley, Fl. Mal. Pen. I (1922) 805 syn. by Bakh. f., Rec. Trav. Bot. Neerl. 40 (1943–45) 125, Henderson, Mal. Nat. J. 4:3 & 4 (1949) 140 and Malay. Wild Fls. I (1959) 140.

Epiphytic shrub up 100 cm tall, in trees or on rocks; lower stem and roots irregularly swollen or tuberous; upper branchlets somewhat flattened with a groove and 2 sharp ridges on each flattened side, later becoming cylindric, smooth, red-brown furfuraceous, glabrescent, 2–3 mm thick; blades sub-coriaceous, glabrous, lanceolate, elliptic, to obovate, obtuse to acuminate at the tip (acumen up to 1 cm long), narrowed and shortly (1–2 mm) decurrent at the base; mid-nerve prominent, intramarginal nerve thin, 1–2 mm from the margin, often disappearing below the tip; secondary venation pinnate, distinct to invisible; 4–17 cm long, 1–6 cm wide; glossy green, drying greenish to olive-green, with a roughened texture above; often purplish and minutely areolate-rugose, drying tan to greenish below; petiole flattened, dorsally grooved, 5–15 mm long, 1.5–2 mm thick furfuraceous; leaf scars prominent; inflorescence a multiflowered, terminal, panicle of cymes, 2–6 cm long; axes flattened, striate, furfuraceous, often with a membranous wing, deep orange or pink to reddish; bracts and bracteoles triangular, 0.5–0.75 mm long, furfuraceous, persistent; primary axes solitary, 1.5–4 cm long with 1–3 nodes, secondary axes 7–12 mm long, tertiary axes up to 7 mm long, 4th axes not developed or up to 4 mm long, pedicels 1–1.5 mm long, red; calyx campanulate-funnelform, constricted above the globose ovary, c. 3 mm long, 2 mm wide, sparsely furfuraceous, margin truncate with 4 thickened cusps, pink, internal lines faint; bud petals dome shaped, rostrate at the tip, 3 mm long; mature petals 4, thin, oblong-obovate, acuminate and thickened at the tip, broadly clawed at the base, 5 mm long, 2 mm wide, white to pink, yellow. frequently with several colours, glabrous; stamens 8, equal, glabrous; filaments flattened, c. 2.5 mm long; anthers cylindric, sometimes slightly curved at the rostrate tip, opening with single terminal pore, c. 2.5 mm long, pink to purple, connective with a curved, linear, whitish-cream spur (drying black), 0.5–0.75 mm long near the filament; stigma minute, style c. 6 mm long, glabrous, with a conical, glabrous, membranous sheath c. 0.75 mm long at the base; locules 4, ovules flat, 3–6 on each placenta; fruit globose — urceolate c. 5 mm long, 4–5 mm wide; areolus raised c. 1 mm, c. 2 mm wide, 4 calyx lobes

distinct; exocarp membranous, yellow to green, turning red, drying brownish with a roughened-muricate texture; seeds c. 10, oblong, c. 2 mm long; hilum grooved with a ridge on one side, about as long as the seed body; testa finely reticulate, tan.

Figure 18: a. inflorescence, calyx, style, ovary, and ovules; b. calyx and corolla bud, c. petal, d. stamen, e. seed.

Distribution: Burma, Malay Peninsula, Sumatra, Borneo, Java. Celebes.

This species is easily confused with *Pogonanthera pulverulenta* (Jack) Bl. (q.v.) which is immediately distinguished by having short auricles at the base of the blade, and setose bristles on the connective. The blades of *Pachymentria constricta* are entirely glabrous and often dry with a distinct, but minute, areolate-reticulate pattern below. Those of *Pogonanthera pulverulenta* are sparsely furfuraceous and usually dry with a roughened-papillose texture below. The fruit of *Pogonanthera pulverulenta* has a slightly raised areolus with ovoid seeds c. 0.5 mm long, while the areolus of *Pachycentria constricta* is raised about 1 mm, often giving the fruit an urceolate shape, and the seeds are oblong, c. 2 mm long.

Penang — Government Hill: Curtis 347 in March 1885, June 1885, in 1893, May 1898; = 347 in May 1898. Ridley = C (Curtis) 347 in July 1889; Penang Hill: Ridley sn, June 1898; Penara Bukit: Tahaya 21478; sine loc.: Goodenough 347.

Perak — Batu Togoh: Wray 2540; Temango: Ridley 14625; Ulu Bubong: King's collector 10569; Upper Perak: Wray 3422, 3434; sine loc.: King's coll. 1701.

Kelantan — Mandi Angin: Whitmore 12064; Sungei Lebir: Whitmore 4376; Sungai Lebir Kechil: Cockburn 7143; Ulu Lebir For. Res.: Suppiah 17712; Ulu Sungei Aring: Whitmore 4471.

Selangor — Sungei Lalang Kajang: Symington 24154.

Pahang — Gunong Tahan: Wray & Robinson 5327; Lubok Tamang: Henderson 11003, Robinson 10972; Sungei Sat. Ulu Tembeling: Henderson 22002; Tahan River: Ridley sn in Aug. 1891; Telom: Ridley sn in Nov. 1908; Wray's Camp: Ridley 16278.

Malacca — Gunong Mersing: Ridley sn.

Johore — Gunong Blumut: Holttum 10662, 10828; Gunong Panti: Rao 914; Suppiah 17817; Kampong Hubong, Endau: Kadim & Noor 356; Sungei Sedile, Mawai: Corner 32791; Tangong Bunga: Ridley sn in 1894.

Singapore — Seletar: Ridley sn in 1890; Sungei Morai: Ridley sn in 1892.

19. *Pachycentria maingayi* (Cl.) Maxw. comb. nov.; *Medinilla maingayi* Cl. in Fl. Brit. Ind. II (1879) 549, King, J. As. Soc. Beng. 69, II: 1 (1900) 471, Ridley, Ml. Mal. Pen. I (1922) 803, Henderson, Mal. Nat. J. 4: 3 & 4 (1949) 139 and Malay. Wild Fls. I (1959) 139.

Epiphytic shrub up to 1 m tall, branches numerous, often with adventitious roots, creeping, or erect; basal roots frequently swollen and ant inhabited (myremocophylous); young branches cylindric, minutely furfuraceous, c. 1 mm

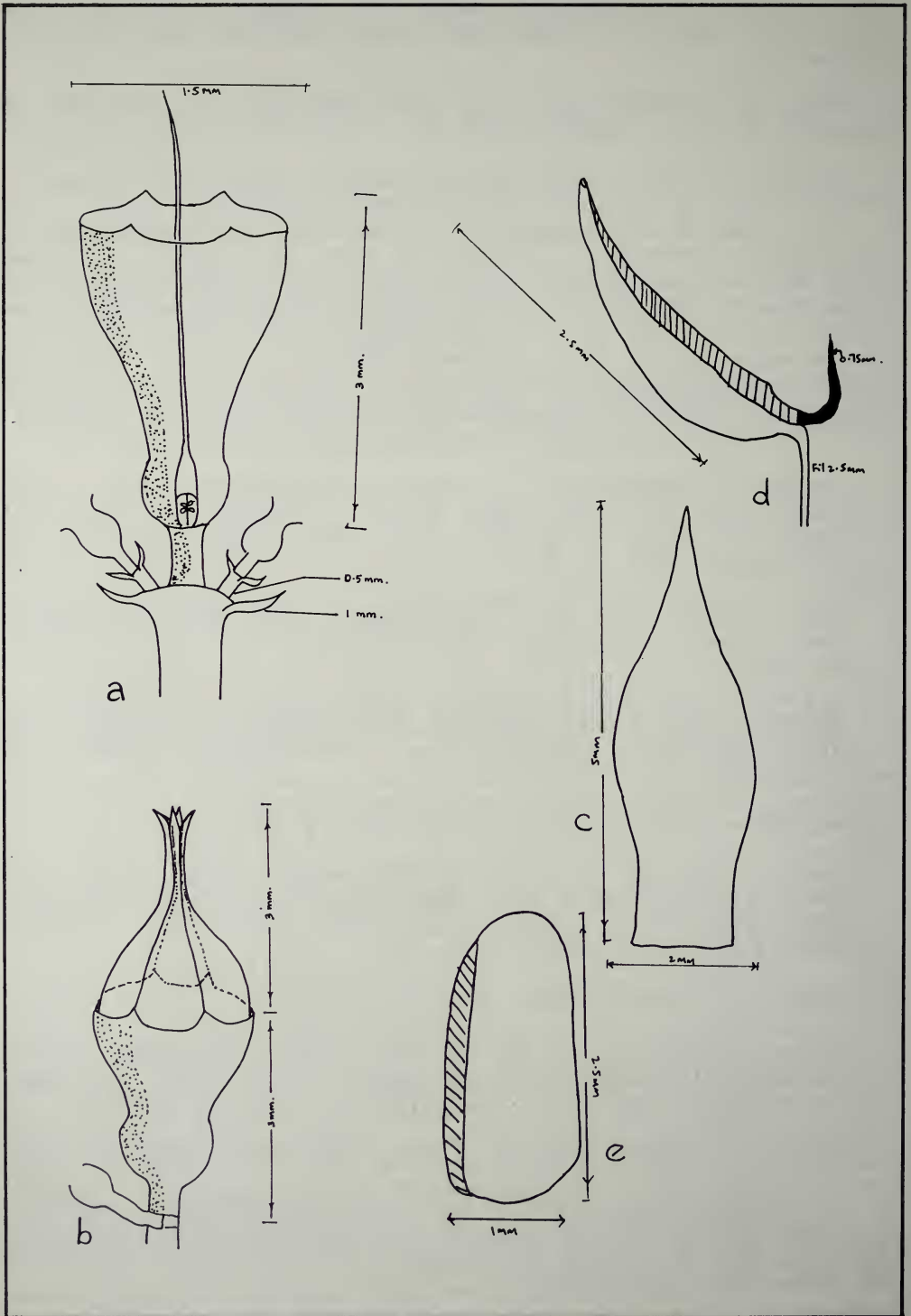


Figure 18. *Pachycentria constricta* (Bl.) Bl., a-d Curtis = 347, e Wray 3422.

thick, nodes swollen; older branches glabrous, 3–5 mm thick; epidermis smooth, drying tan to light brown; leaves opposite, numerous; blades thick coriaceous, sparsely furfuraceous, especially near the petiole, glabrescent; obovate to sub-orbicular, broadly rounded at the tip, narrowed, and decurrent at the base; mid-nerve sunken above, slightly raised below; intramarginal pair of nerves very faint to invisible, 0.5–1.0 mm from the margin; other venation invisible; 1.5–3 cm long, 1.0–2.0 cm wide; dark green above, green below, drying greenish with brown above, brown below, texture roughened on both surfaces; petiole 3–5 mm long, c. 0.75 mm thick, minutely furfuraceous, glabrescent; flowers terminal or axillary, solitary, paired, or in few flowered cymes; axes minutely furfuraceous, glabrescent, cylindric, green; primary axes not developed or c. 1 mm long in solitary flowers, in cymes 1.0–1.5 cm long, c. 1 mm thick, with one node; secondary axes c. 1 mm long; pedicels c. 1 mm long; bracts and bracteoles ovate, acute, up to 0.5 mm long, furfuraceous; calyx campanulate, constricted above the globose ovary with a neck in between, 2.5–3 mm long, c. 1.5 mm wide, margin shortly 4 lobed with thickened cusps, red; petals 4, thin, oblong to obovate, acuminate-rostrate at the thickened tip, 3.5–4 mm long, 1.5–2 mm wide, white with red tips; stamens 8, equal; filaments flattened, c. 2 mm long, white; anthers 2–3 mm long, connective without a crest, provided with a short, thickened spur at the base, locules inappendiculate, rostrum thin and tubular, red; stigma capitate, minute; style slender, 4–6 mm long, glabrous, with a minute collar at the base; locules 4, each with 6–8 axile ovules; fruit globose, 5–6 mm diameter, capped by the raised (c. 1 mm) calyx remnant, areolus c. 2 mm wide; exocarp green turning red when ripe, pericarp soft and pulpy; seeds few, oblong, c. 2 mm long, testa shallowly reticulate.

Figure 19: a. branch tip, leaf, and calyx; b. petal, c. stamen (lateral view), d. stamen (front view).

Habitat: on various evergreen trees and bamboo, generally in shaded areas.

Distribution: central and southern Malaysia, Sumatra (east coast, rare).

Medinilla maingayi Cl. is, unquestionably a *Pachycentria* since it lacks extraovarial chamers and is without a connective crest and locule appendages. This species is very similar to *P. glauca* Triana found in Sumatra and Borneo (*type*: Lobb 1853 (Baccari 415), from Borneo), which has generally larger, thinner, and narrower leaves; and longer inflorescences. The flower structure of the two species is nearly the same except that *P. glauca* lacks a disc at the base of the style.

Kedah — Kedah Peak (Gunong Jerai): Robinson & Kloss 6055, Stone 8552.

Perak — Grik: I.H. Burkill 3845; Joh, Batang Padang: Henderson 10831.

Pahang — Pohoi River: Whitmore 362; Sungei Perting: I.H. Burkill & Haniff 16568; Tahan River: Ridley 2663; Ulu Sungai Sat: Shah & Noor 1802; Upper Perak: Wray 3781.

Selangor — Pahang Track: Ridley 8621.

Malacca — Gunong Mersing; Ridley sn on 7 June 1892; sine loc.: Maingay 807 (2960) (*syntype*).

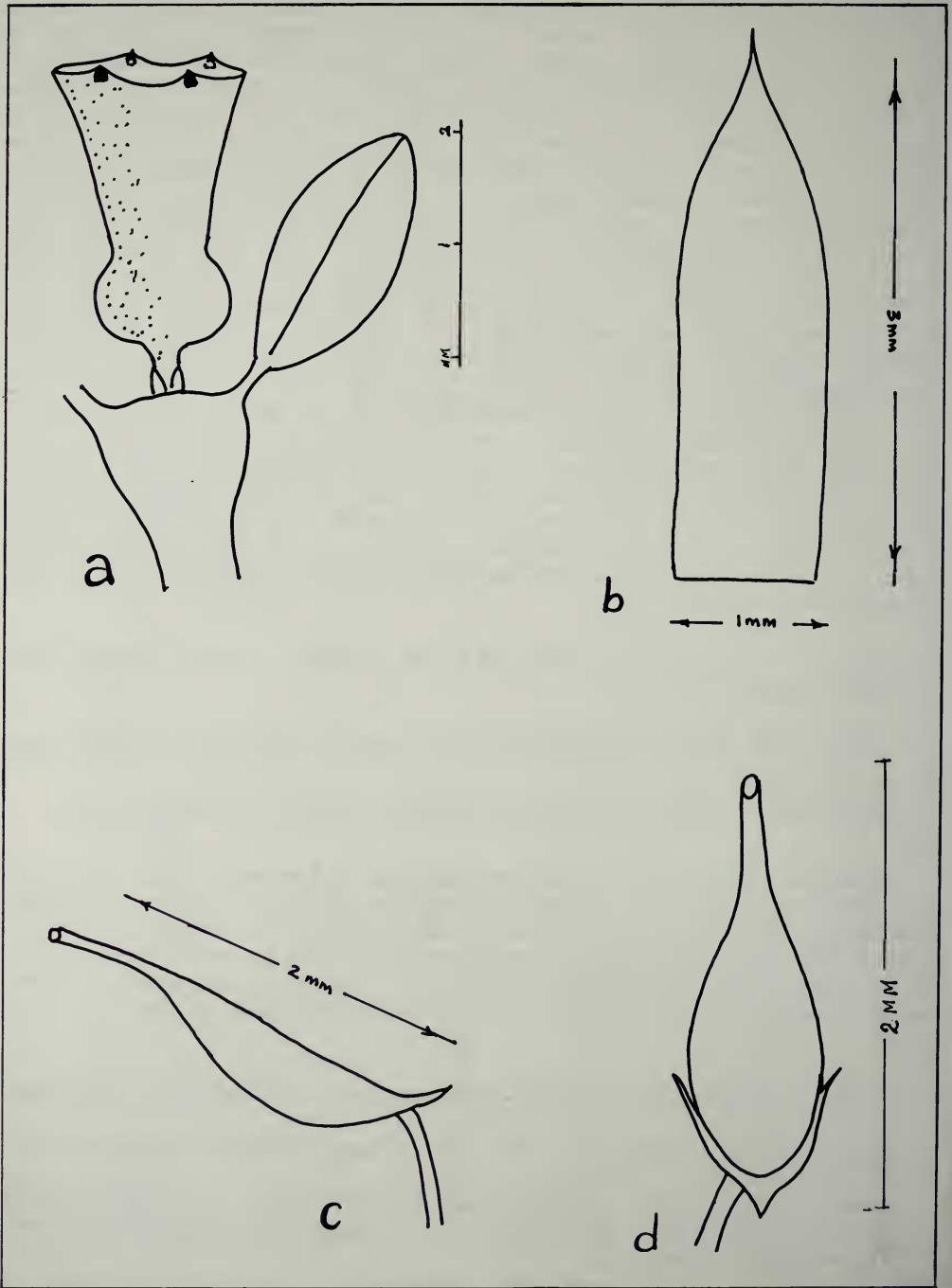


Figure 19. *Pachycentria maingayi* (Cl.) Maxw., a-d Maxwell 76-785.

Johore — Bukit Banang: Ridley sn in Nov. 1900; Gunong Panti: H.M. Burkill 3426, Ridley sn in Dec. 1892; Lombong Batu, Mersing: Tan sn; Mersing-Endau Road: Purseglove 5506; Rengam For. Res.: H.M. Burkill 1793; Sedenah: Ridley sn in 1908; Tana Runto: Ridley sn in 1890.

Singapore — Goodenough sn on 14 April 1890, Maingay 806 (3329) (*syntype*), Maxwell 76–825; Ridley 1652, 2018, sn in June 1889, Aug. 1889, in 1894.

20. *Pachycentria microsperma* Becc., *Malesia* II (1884) 238 and tab 58 fig. 1–9; Cogniaux in DC. Monogr. Phanero. 7 (1891) 609; Merrill, J. Str. Br. Roy. As. Soc. 86 (1921) 449; Bakh. f., Rec. Trav. Bot. Neerl. 40 (1943–45) 123.

Epiphytic shrub up to 2 m tall; branchlets slightly compressed and bluntly 4-angled, becoming cylindric, smooth, minutely furfuraceous and glabrescent, c. 2 mm thick, drying tan; nodes distinct with prominent leaf scars; blades subcoriaceous to fleshy coriaceous, glabrous, lanceolate to oblong, acuminate at the tip (acume nc. 1 cm long), acute and decurrent at the base; mid-nerve with a pair of thinner nerves arising from near the base, secondary venation obscure, 7–10 cm long, 2–3 cm wide, drying olive greenish above, greenish to brownish below, surfaces often with a rugose to areolate texture when dry; petiole cylindric with a dorsal groove, glabrous, 7–10 mm long; inflorescence terminal or axillary, composed of many-flowered paniculate cymes, 2–4 cm long, axes 4-angled, flattened, or cylindric, glabrous; bracts and bracteoles triangular, acute, glabrous, 0.5–1 mm long, usually caducous; primary axes 1 or 2 per axil, 12–25 mm long with 1 or 2 nodes; secondary axes up to 10 mm long, 3d axes not developed or up to 5 mm long, pedicels c. 1 mm long; calyx tube funnelform above the globose base, c. 4 mm long, sparsely furfuraceous and ribbed outside, margin with 4 triangular, acute lobes, each c. 1 mm long; petals 4, lanceolate, acuminate, thin, with visible venation, c. 6 mm long, 2 mm wide, white; stamens 8, equal, glabrous; filaments flattened, c. 3 mm long; anthers oblong, c. 3 mm long, opening with a single pore at the tip of a thin rostrum, locules inappendiculate, connective with a minutely pilose or glabrous, curved spur c. 1 mm long; stigma capitate, minute; style slender, glabrous, c. 7 mm long, merging with the ovary in a basal sheath; ovules numerous in each of the 4 locules; fruit globose, c. 5 mm wide, with a thin neck c. 2 mm long, 1.5 mm wide, and the calyx remnant at the top, calyx remnant c. 2 mm wide with 4 inflexed lobes; exocarp thin, papillose-muricate, pale yellow turning red when ripe, drying blackish; seeds numerous, ovate, c. 0.75 mm long, minutely reticulate.

Figure 20: a. calyx, b. petal, c. stamen, d. fruit, e. seed.

Henderson 25242, which was collected on limestone, is the only specimen of *P. microsperma* Becc. that I have seen from the Malay Peninsula. This fruiting specimen is very similar to *P. constricta* (Bl.) Bl. (q.v.) in its vegetative characteristics, but differs in having papillose-muricate fruit with longer calyx lobes and smaller, more numerous seeds. Included in the Singapore collection are several flowering collections from Borneo annotated by Furtado as *P. microsperma* Becc. — all of which have larger calyx lobes similar to those on Henderson's specimen. The flowers otherwise are nearly identical to those of *P. constricta* (Bl.) Bl. except that Ridley sn from Bau, has a pilose connective spur. Bakh. f. notes that *P. microsperma* Becc. has smaller, ciliate petals; and a fimbriate connective spur. Main 1831, and Purseglove 4439 (collected on limestone) have both flowers and fruit, thus I have been able to get an idea of what the flowers of Henderson 25242 must have been like since the fruit and seeds of all 3 collections match.

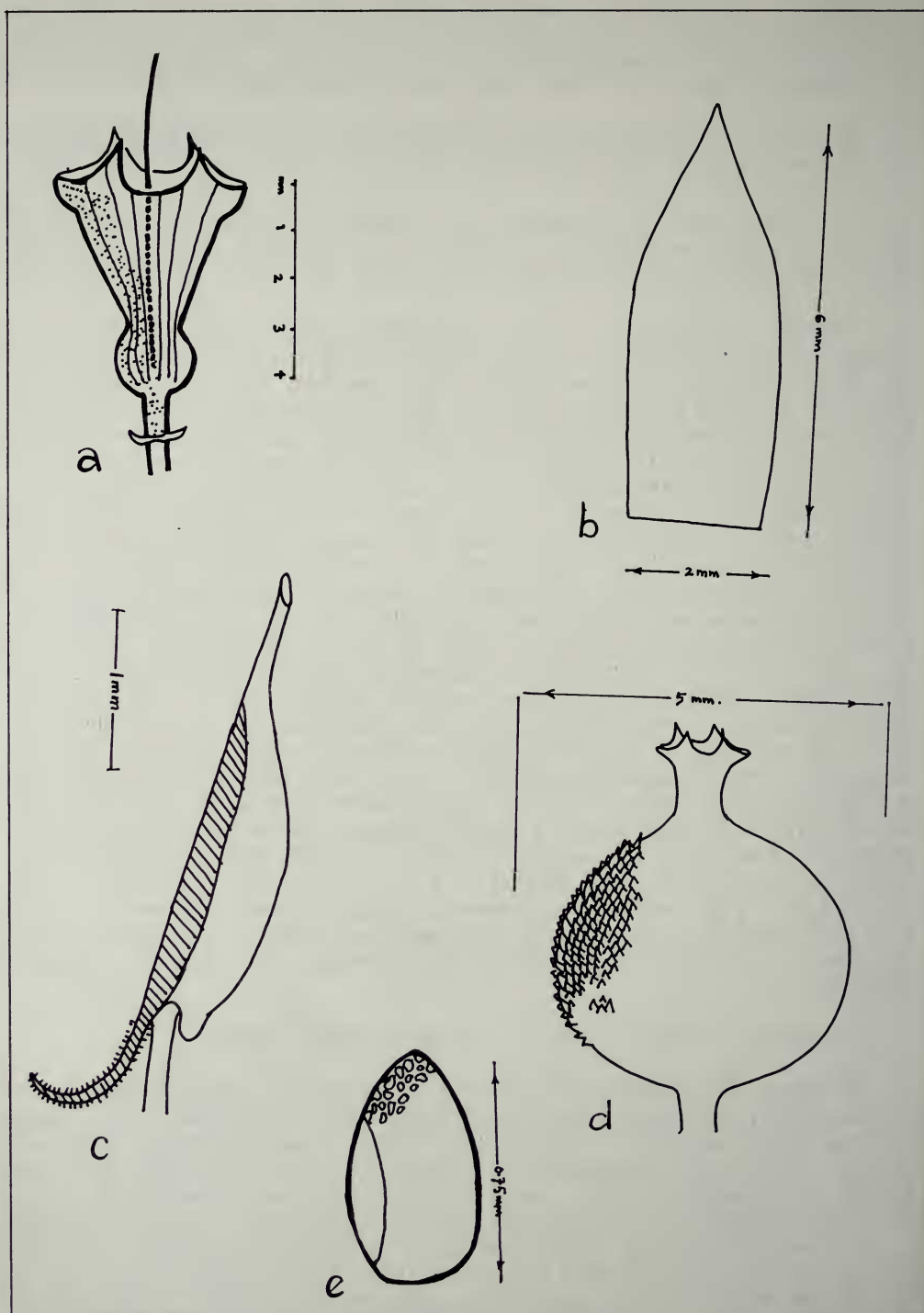


Figure 20. *Pachycentria microsperma* Becc., a-c Ridley sn, Bau, Borneo; d & e Purseglove 4439.

While these collections of *P. microsperma* Becc. may not exactly fit the description given by Bakh. f., they are distinct from *P. constricta* (Bl.) Bl. More work on *P. microsperma* Becc. is necessary since I am not exactly certain of its relationship with *P. constricta*. I have not seen any authentic collections *P. microsperma* Becc.

Pahang — Bukit Cheras: Henderson 25242.

POGONANTHERA Bl.

Blume, Flora 14 (1831) 520 and Bijdr. Nat. Wet. 6 (1831) 261; Naudin, Ann. Sci. Nat. ser. III: 15 (1851) 302; Triana, Trans. Linn. Soc. 28: 1 (1871) 89; Clarke in Hk. f. Fl. Brit. Ind. II (1879) 550; Cogniaux in DC. Monogr. Phanero. 7 (1891) 609; King, J. As. Soc. Beng. 69, II:1 (1900) 65 (Mat. Fl. Mal. Pen. 473); Ridley, Fl. Mal. Pen. I (1922) 805; Bakh. f., Rec. Trav. Bot. Neerl. 40 (1943-45) 127, Henderson, Malay Nat. J. 4:3 & 4 (1949) 139 and Malay. Wild Fls. I (1959) 139.

Several species and varieties have been described, but according to Bakh. f. l.c. 128 there is only one polymorphic species which is found in the Malay Peninsula, Philippines, and the Malay Archipelago.

Pogonanthera pulverulenta (Jack) Bl., Flora 14 (1831) 521. *Melastoma pulverulenta* Jack, Trans. Linn. Soc. 14 (1825) 19. *Pogonanthera pulverulenta* (Jack) Bl. var. *grandiflora* Miq., Fl. Ned. Ind. I (1855) 553; *Pogonanthera reflexa* (Reinw. ex Bl.) Bl., l.c. 521, *Melastoma reflexa* Reinw. ex. Bl., l.c. 521; *Pogonanthera reflexa* (Reinw. ex Bl.) Bl. var. *squamulata* Korth. ex. Bl., Mus. Bot. Lugd.-Bat. I:2 (1849) 24; *Pogonanthera squamulata* (Korth. ex Bl.) Bl., l.c. (1849) 24, nomen. *Pternandra parasitica* Finl. & Wall. (Wall. cat. 4086, A & B).

Epiphytic shrub up to 1.5 m tall, on rocks or trees; branches cylindric, often slightly 4-angled, densely red-brown furfuraceous, glabrescent, 2-3 mm thick; older branches smooth or with scattered pustules, mostly glabrous, up to 8 mm thick, bark grey-brown, thin, nodes prominent; leaves opposite; blades fleshy coriaceous, lanceolate, oblanceolate, elliptic, to obovate; at first minutely furfuraceous, glabrescent; acute to acuminate at the tip, narrowed and in larger blades shallowly (1-2 mm) auricled at the base; veins reddish, mid-nerve with 1 pair of very faint basal nerves (often invisible below); transverse venation obscure to invisible; 4.5-9.5 cm long, 1.0-3.5 cm wide; glossy light green drying dark brown-greenish above, tan to light brown below, texture roughened, often papillose below; petiole flattened and shallowly grooved, minutely red-brown furfuraceous, glabrescent, 5-9 mm long, 1.5-2 mm thick; inflorescence a terminal panicle of cymes, multiflowered, 5-12 cm long, spreading; axes flattened, often 4-angled, minutely red-brown furfuraceous, glabrescent; bracts and bracteoles lanceolate-ovate, acuminate, red-brown furfuraceous, 1.0-1.5 mm long; primary axes generally solitary, less frequently paired, 4-9 cm long, with 2-4 nodes; secondary axes 1-3.5 cm long with 2-3 nodes, tertiary axes 1-2.5 cm long with 1-3 nodes, 4th axes not developed or 1-4 mm long; pedicels 2-3 mm long; calyx campanulate c. 1 mm long, 1.5 mm wide constricted above the globose ovary which is c. 1 mm diameter, sparsely furfuraceous, red, margin truncate with 4 triangular lobes; petals 4, thin, oblong-obovate, acute at the tip, broadly clawed at the base, minutely papillose on both surfaces, 3 mm long, 1.5 mm wide, red; stamens 8, equal, white; filaments 1.5 mm long, glabrous;

anthers cylindric, slightly curved at the rostrate tip, c. 2 mm long, connective with a thickened zone near the base with numerous short bristles, locules and base of the connective inappendiculate; stigma minute, style c. 5 mm long, glabrous, with a villous, cushion-like collar at the base; septa and extra-ovarial chambers none; locules 4, ovules axile, minute, c. 25 in each; fruit globose, 5–6 mm diameter, capped by the distinctly raised (c. 0.5 mm) and widened calyx remnant; c. 3 mm wide; exocarp thin, smooth, green turning orange red, drying brown to black; seeds numerous, ovate, obtuse at both ends, c. 0.5 mm long, hilum concave; testa finely reticulate.

Figure 21: a. calyx, b. petal, c. stamen, d. style, collar, and ovary.

Distribution: Malay Peninsula to New Guinea, Philippines; recorded on limestone.

Pachycentria constricta (Bl.) Bl. (q.v.) is in most ways quite similar, but differs in having acute blade bases without auricles and the connective is without bristles, but has a basal spur. The blades of *P. constricta* are entirely glabrous and often dry with a smooth, minutely areolate pattern below. The fruit of *P. constricta* has an areolus c. 1 mm high and oblong seeds c. 2 mm long.

Penang — Pantai Acheh: Hardial 684; Waterfall Garden: Whitmore 20519.

Perak — Gunong Laba: Whitmore 0586; Larut: King's collector 3793; Leng-gong: Everett 14536; Pangkor Island: Whitmore 3010.

Selangor — Ulu Langat: Gadoh 834, 1683.

Pahang — Gunong Lesong For. Res., Rompin: Lindong 80964; Sungai Tahan: Shah 1405.

Johore — Bukit Badak: Hassan & Kadim 29; Gunong Blumut: Shah & Samsuri 2181; Bukit Paloh Estate: Shah & Kadim 372; Gunong Panti: Ahmad 319, Cockburn 7850, Jumali 4279 K6732, J. & K. K1019, Stone 4784; Kota Tinggi: H.M. Burkill 1817; Pulau Pemanggil, Bukit Batu Buau: Noor & Samsuri 21; Rengam For. Res.: H.M. Burkill 1790.

sine loc.: Franck 1003.

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<i>M. chionantha</i> Stapf	17
<i>M. clarkei</i> King var. <i>clarkei</i>	2

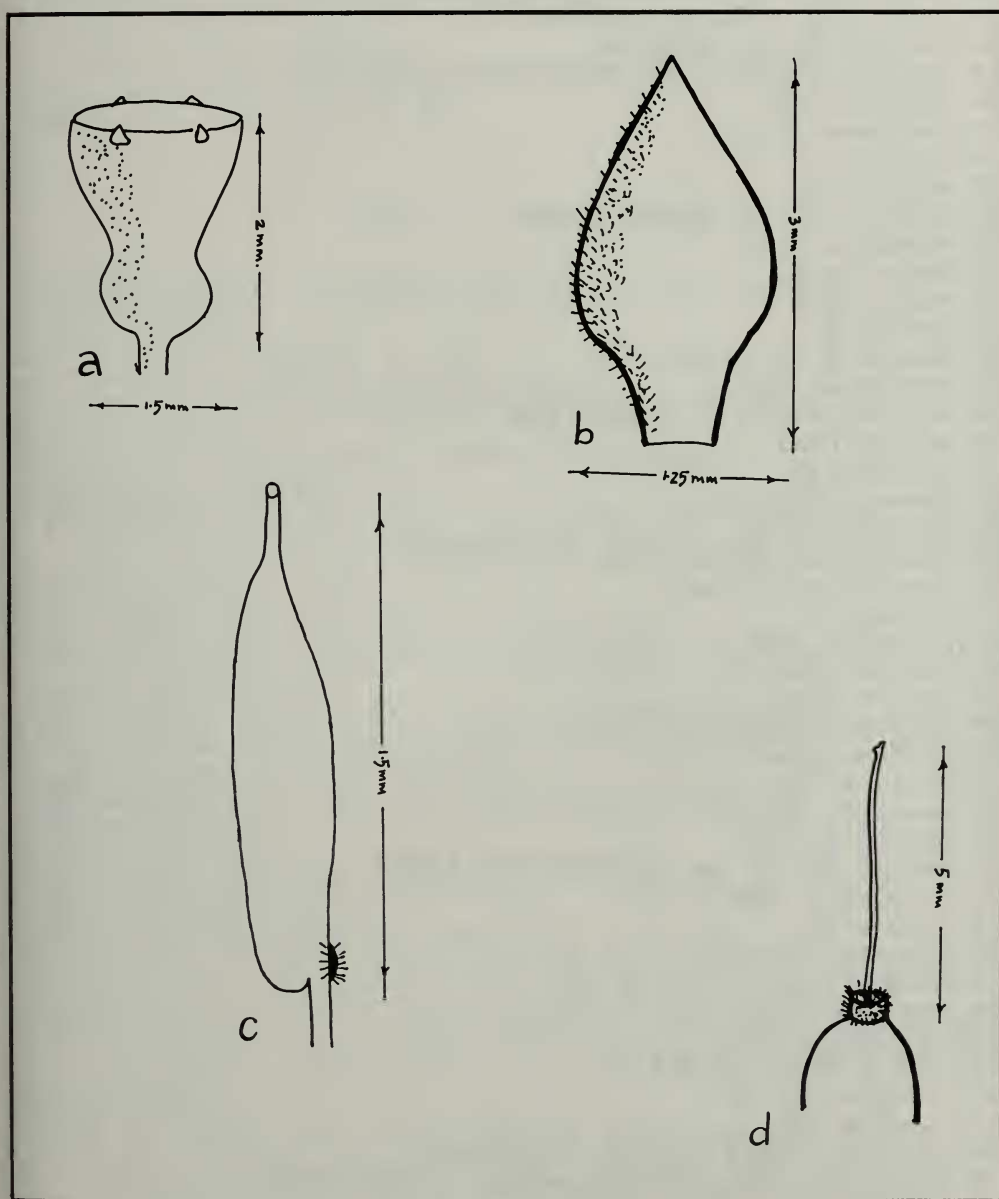


Figure 21. *Pogonanthera pulverulenta* (Jack) Bl., a-d Shah 1405.

<i>M. clarkei</i> King var. <i>crassiramea</i> (Hend.) Maxw.	3
<i>M. clarkei</i> King var. <i>sumatrensis</i> Ohwi	2
<i>M. crassifolia</i> (Reinw. ex Bl.) Bl.	4
<i>M. crassifolia</i> (Reinw. ex Bl.) Bl. var. <i>hasseltii</i> (Bl.) Bakh. f.	4
<i>M. crassinervia</i> Bl.	q.v. 9
<i>M. crassiramea</i> Hend.	3
<i>M. curtisii</i> Hk. f.	5
<i>M. elliptica</i> Craib	5
<i>M. elliptica</i> Craib var. <i>tetramera</i> Craib	5
<i>M. emarginata</i> Craib	14
<i>M. ferrata</i> Craib	6
<i>M. gratiosa</i> Stapf	17
<i>M. hasseltii</i> Bl.	4
<i>M. hasseltii</i> Bl. var. <i>griffithii</i> Cl.	11
<i>M. heteranthera</i> King	15
<i>M. heteranthera</i> King var. <i>latifolia</i> King	15
<i>M. holttumi</i> Hend.	14
<i>M. intermedia</i> Bl.	q.v. 12
<i>M. javanensis</i> (Bl.) Bl.	q.v. 8, 17
<i>M. laurifolia</i> (Bl.) Bl.	q.v. 4, 6
<i>M. laurifolia</i> (Bl.) Bl. var. <i>ferrata</i> (Craib) Maxw.	6
<i>M. longipedunculata</i> Cogn.	q.v. 17
<i>M. maingayi</i> Cl.	19
<i>M. pahangensis</i> Ridl.	2
<i>M. pendens</i> Ridl.	7
<i>M. pendula</i> Merr.	q.v. 12
<i>M. penduliflora</i> Ridl.	8
<i>M. perakensis</i> King	2
<i>M. pterocaula</i> Bl.	q.v. 9
<i>M. quadrifolia</i> (Bl.) Bl.	9
<i>M. radicans</i> (Bl.) Bl.	9
<i>M. radicans</i> (Bl.) Bl. var. <i>quadrifolia</i> (Bl.) Bakh. f.	9
<i>M. robusticaulis</i> Bakh. f.	q.v. 8
<i>M. rosea</i> Gaud.	q.v. 2
<i>M. rubicunda</i> (Jack) Bl.	10
<i>M. scandens</i> King	1
<i>M. scortechinii</i> King	11
<i>M. selangorensis</i> Maxw.	12
<i>M. speciosa</i> (Reinw. ex Bl.) Bl.	13
<i>M. succulenta</i> (Bl.) Bl.	14
<i>M. teysmanni</i> Miq.	q.v. 15
<i>M. varingiaefolia</i> (Bl.) Nayar var. <i>varingiaefolia</i>	15
<i>M. varingiaefolia</i> (Bl.) Nayar var. <i>bakhuizenii</i> (Nayar) Maxw.	16
<i>M. venusta</i> King	17
<i>M. venusta</i> King var. <i>chionantha</i> (Stapf) Ridl.	17
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<i>Pogonanthera pulverulenta</i> (Jack) Bl.	21
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<i>P. reflexa</i> (Reinw. ex Bl.) Bl. var. <i>squamulata</i> Korth. ex Bl.	21
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